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WOODCOCK ON NEST, CHANNEL LAKE, INDIANA

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AN INTIMATE ACQUAINTANCE WITH WOODCOCKS.

BY GERARD ALAN ABBOTT.

The woodcock still exists in considerable numbers where favorable conditions for feeding and nesting are to be found in the great lake region. They were probably more numerous fifteen years ago when I first undertook a detailed study of their habits, but a greater time elapsed between finds because I was not "On to their ways."

Quite a few of us have probably seen a sitting woodcock. They are to be found when scarcely any other birds are involved with the duties of nesting. The find is an impressive one, and each and every naturalist who chances upon a *Philohela minor* squatting on the leaves is likely to transmit the news to his fellow friends.

It is not difficult to photograph this bird during the twenty-one days she or her mate may be covering the eggs, and a personal acquaintance may be formed.

I have probably been among the breeding woodcock at some time or other every hour out of the twenty-four, and it was not until I had seen and heard much of them between sunset and sunrise that any feeling of intimacy existed.

Rarely have I observed "borings" near a sitting bird. The ground they use for nesting purposes is necessarily damp at

WOODCOCK ON NEST, CHANNEL LAKE, INDIANA

the season when they are laying, but I would not consider it wet in comparison with much of the adjacent territory, which is apt to consist of marshes, lakes and spring holes. I have no doubt but that the woodcocks probe for earth worms in the earth immediately surrounding the nesting site, but this locality is not muddy nor oozy enough to retain the perforations caused by the bird's bills.

Large, chalky deposits caused by the birds are without exception very much in evidence near the nest. It is sometimes possible to locate the nest by following these daubs upon the leaves. Again the droppings may occur seventy-five yards from the nest, and in the cover used by the male as a roosting place during the daytime.

In little openings where the male goes forth at sundown for the song flight is another likely spot for chalk marks. The peculiar nasal "pink," as it sounds to me, is first heard shortly after sundown at intervals of every five minutes during the first half hour. If the day has been extremely cool and wet the males seem less ardorous, and the call may be uttered two or three times prior to the first flight.

We will presume that a typical April day has drawn to a close. The temperature is about 50°. We are in northern Illinois groping our way through the brush on what appears to be an old moraine of Lake Michigan. From yonder clump of willows a rather shrill call startles us. Surely no Nighthawks are about, for it is too early in the year to even expect them, yet the sound was decidedly suggestive of the call note of our "bull-bat." My companion is quite sure the author of this weird sound is only a few rods away. But, as we move cautiously in the direction, the sound is repeated, but we do not seem to be any closer to the object of our search. The bird is an adept ventriloquist and is probably six or seven times as far away as we had first supposed. While we are gradually gaining upon him other males are heard calling, and the wooded area harbors several woodcocks, each calling in turn, until the notes vibrate through the spring air like the trilling of tree-toads or the singing of katydids on a midsummer's eve. We hasten to a point of vantage before

WOODCOCK ON NEST, POPLAR LAKE, INDIANA

the performance begins. I know every foot of the ground, but before stationing ourselves for the occasion several conditions are to be taken into consideration. If there is any moon we want to be in full sight of it, and if possible let us get on the windward side of the bird. The woodcock, like his relative the jack-snipe, is sure to leap into the wind as he starts to fly.

Twice a woodcock has flown before us in a noiseless manner. The wing motion consisted of half strokes only, and the course was horizontal and only moderately rapid. These two flights were very similar to those of the Upland Plover. Those who have seen the graceful Bartramian will recall that the wing stroke is comparatively short and rapid. I have never seen this flight of the woodcock described by other observers, but on such occasions the wing is highly concave, and only the tips seem to extend below the level of the body during any part of the stroke. This method of navigation is an abrupt contrast to the jerky, zig-zag flight used by the birds as they arise from cover when disturbed or flushed. Occasionally on wet April days I have witnessed this silent flight of the woodcock. It is apparently used when they are flying to and from their feeding grounds, and it is not improbable that the same flight is maintained by the birds during their protracted journeys while migrating.

The third and most interesting form of locomotion immediately follows an emphatic "pink." The wing beats are so rapid it is impossible to distinguish them, as the bird progresses slowly in a circular course. The distinct whistle from the edged primaries of a flushed bird is entirely different from the sound we now hear. This same woodcock passes before us so like a great hummingbird, but the circles he makes in the air are growing less in circumference as he rises spiral like against the yellow rays of the moon. A series of gushing, warbling notes issue from his throat. A remarkable vocal demonstration for such a droll looking bird. The buzzing of the wings have ceased. The bird is three hundred feet above and the apex of his flight has been reached. The song ceases and the performer volplanes silently to the same

cover from which he arose and immediately resumes the call note.

Despite the fact that I have been a lonesome spectator to these demonstrations for years and years, they are the most fascinating of bird manoeuvres.

The sitting bird successfully suppresses all signs of nervousness as she sits motionless upon her eggs beneath the shadow of a drooping branch or broken stub. It seems impossible to conceive that the same bird (for the male often incubates) is capable of such an animated flight and gifted with the remarkable vocal power which he utters during the mating and breeding seasons.

A TIME WITH THE OWLS.

BY DR. R. W. SHUFELDT, WASHINGTON, D. C.

One afternoon, sometime during the first part of January (1914), when returning from the United States National Museum where I had been looking over some owls, I passed up Tenth Street, only a few paces from the building in which I had been, when I spied, suspended for sale in one of the markets, a fine specimen of the Barred Owl (*Strix v. varia*). It was an old bird in perfect plumage, and I secured it for a quarter of a dollar. Recently they have been quite numerous in this section, and this one was shot within a couple of miles of where I stood when making the purchase.

Several days passed before I could get at this specimen; but when I did, I obtained from it a very perfect skeleton as well as a part of the plumage. On opening its stomach—a practice I never neglect—it was found to contain the remains of three or four small mice. As usual, these remains had formed into "pellets," principally consisting of hair and bones. Some of the jaws were quite complete, and these I saved, later on showing them to Mr. Gerrit S. Miller, Jr., Curator of the Division of Mammals of the U. S. National

THE VISAGE OF THE SNOWY OWL (NYCTEA NYCTEA; ADULT)
Photo by Dr. Shufeldt

Museum, who kindly pronounced them to be those of specimens of *Pitymys pinetorum*.

While investigating some of the anatomy of this owl—another practice I am almost invariably guilty of during such operations—there came to hand a package from Mr Edward E. Schmid, the well-known proprietor of an extensive Pet Emporium in Washington, containing not only a fine Macaw (*Ara macao*), but also an unusually good specimen of a Snowy Owl (*Nyctea nyctea*). Both specimens had recently died, and they were adults in fine plumage. Mr. Schmid kindly sends me all such material, and has done so for many years. He is well known to the naturalists of the Smithsonian, where he occasionally sends such animals as die on his hands.

Here was Owl No. 2, and from it I obtained another fine skeleton, together with not a little more of its structure or its anatomy, as some people say. Parts of this were so important that I wrote out a description of them, which will appear elsewhere later on.

I did not photograph the Barred Owl, though I usually secure negatives of nearly all specimens coming to my study; I find the prints are often valuable, especially for the use of taxidermists. Turning my camera, however, on the face of this Snowy Owl, I got a good negative of it, a print from which is here reproduced to show how useful such pictures may sometimes be. I have many of them, not only of birds, but of a great number of other animals. This is not an example of the best ones, for the big, yellow eyes took black, which is unfortunate. I have some parrots that it would be hard to say whether they had been taken from dead or from living specimens; later on I propose to publish some of these —in fact, a few of them are being engraved as I write these lines.

While contemplating the structure of my Snowy Owl, a curious coincidence occurred, for *two* more of the same species came to hand. This time, however, they came from Copenhagen, Denmark, being a most generous gift of my friend, Mr. Gerhard Heilmann of that city. I hasten to say that

A PAIR OF SNOWY OWLS
From a painting by Gerhard Heilmann, Copenhagen, Denmark

it was an oil painting of these birds, the subjects being natural size and in an elegant plain frame of gilt (30x30 inches).

As posed by the artist, these Owls are shown in Fig. 2, which is a reproduction of a photograph I made of this beautiful picture. It will be noted that they are sitting on a dark rock, partly covered with snow, the rock being on the shore of the frozen sea on the north coast of Denmark. The birds are contemplating the setting sun, and Mr. Heilmann has been wonderfully successful in depicting the rosy hues of the same, as its rays tinge their white plumages and the glistening ice on all sides. As we say of so many beautiful things in this world, this picture should be seen to be appreciated.

At the present time, Mr. Heilmann is engaged upon a very important piece of work—a study of the origin of birds from their ancestral stock among the prehistoric reptiles. Two Parts of this work are already published, with many fine illustrations, and the remaining three Parts will appear during the course of 1914.

With my Barred Owl, and old *Nyctea* coming in threes, I surely thought that my strigine experiences—following upon each other with such rapidity—would come to an end; but no, I was to be treated to another immediately on top of them. Hardly had my picture been hung in an appropriate place, than a call on my 'phone from Mr. Schmid informed me that he had at my service a fine, living specimen of an adult Saw-whet Owl (*Cryptoglaux a. arcadica*), which had been captured in the city (Washington) the day before. As usual, the man who took it simply walked up to the bird and "bagged it." In less than an hour it was in a small cage in my study, at which time the amusements for the afternoon were opened. He was not altogether a fractious subject, however; not nearly as bad as many another live bird I have photographed.

It seems to me that all my life I wanted to have in my possession a specimen of a living Owl of this species; and now, after waiting for over half a century, here was the real

SAW-WHET OWL (CRYPTOGLAUX A. ARCADIA)
Photo from life by Dr. Shufeldt. Reduced.

thing: a perfectly healthy, adult "Saw-whet," in elegant winter plumage.

There are but very few even passable pictures of this owl extant and a good many very poor ones. Many years ago I saw one, painted life-size in water-color by John Woodhouse Audubon, the erratic son of the well-known Franco-American ornithologist. Without exception I think it was the worst picture of an owl that I recall having ever seen. It reminded me of the labored drawing of a bird's nest by a little fellow seven years old, who, when he had finished his sketch, showed it to his father with no small degree of pride. "What is it intended to represent, my son?" said the father, after gazing at it for a moment or so with a puzzled expression. "A bird's nest," explained the young hopeful. "Oh," said his parent, "it looked to me like a pretty good attempt to draw a cyclone."

On this occasion I will not state exactly how many dry plates I expended on this little representative of the *Strigidæ;* but it was a number over a box of five by eights and two eight by tens. I don't regret it though, for I did get some pictures after the first few attempts, and some good ones. One of these last is reproduced here (Fig. 3).

In studying him, I noticed that, when his eyes were closed, the feathering below them became very prominent, bulging outward and downward like two tufts—one beneath either eye. This was especially the case when he started to doze off to sleep, and it is a character in the plumage of this owl that I have never seen described. Thus far, he has refused to drink any water, and will not eat raw beef placed as little bits in his cage at night. So I have kept him alive by feeding him with the same, putting the pieces, one at a time, into his mouth with a pair of spring forceps. After swallowing two or three pieces, he became very lively during the course of the following ten minutes. I believe he would relish a sparrow, but I have not as yet secured one in that I might make the trial. As a matter of fact, I do not believe he will live very long in confinement; but should he succumb, there is another skeleton coming to my collection.

This is all I have had to do with owls for the last five or six days.

PIED-BILLED GREBE NOTES.

BY IRA N. GABRIELSON.

Ever since the time, when as a small boy, I first discovered that the mass of decaying vegetation found floating in the swamps was the nest of the Pied-billed Grebe (*Podilymbus podiceps*) this species has been of great interest to me. In the course of observations from year to year a few facts of interest have been noted that I do not recall seeing in print.

The species nests here (Northwestern Iowa*) around the edge of the lakes and ponds in the rushes and in the cat-tail swamps. The nest is built of decaying vegetation and is usually floating, slightly anchored to the surrounding reeds. The eggs, when left, are completely covered with the nest material and occasionally a few green reeds. The statement is often seen that the bird covers the eggs in this manner, but I do not remember of seeing any explanation as to how this was accomplished. After watching many times one was discovered in the act. She stood or rather sat on the edge of the nest and used the beak to root the nest material over the eggs. In this manner she worked entirely around the eggs until they were hidden from view. The beak was then used, much as a robin uses hers in ironing the nest, to spread the material around. She then seized one or two reeds, broke them off with a quick sidewise jerk of the head, laid them across the nest, and sliding into the water swam away.

It is commonly known that many birds will feign injury to entice an intruder away from the nest or young, but to me, at least, it was a great surprise to know that the Pied-billed Grebe would occasionally resort to this artifice. Only two instances of this have come to my notice, and both of these occurred on the same day, June 26, 1913. In com-

* This includes notes made in a Nebraska swamp just across the Missouri River from Sioux City, Iowa, as well as those in Iowa.

pany with Mr. Howard Graham the writer was poling a boat thru the rushes of an old swamp for the purpose of locating Yellow-headed Blackbird nests on which we wished to make some observations. Suddenly a great commotion was heard just ahead of the boat, and I stepped to the prow to see what it was. The boat was almost onto a nest of this species and the old bird was near it, apparently helpless. One wing hung limp and she frantically kicked and splashed about without making any forward progress. All of the time she uttered a curious grating note unlike anything I ever heard from a grebe. For an experiment we swung the boat around and followed her. She kept up these actions, but swam slowly away until a point some twenty-five yards from the nest was reached, when she dived into the reeds and was seen no more. Shortly after this experience, progress became so slow in the boat that we abandoned it and started to wade. After traveling about half an hour, I came to another grebe nest in which the eggs were just hatching. Both parents were present and commenced the same performance. As I took a step forward they worked slowly away, splashing violently and creating a great disturbance. The same peculiar call was noted as in the other case. After moving a few steps I stopped and remained standing quietly near the nest. The grebes, on seeing me stop, disappeared and I supposed they had given up the attempt to lead me away. Suddenly one popped into view almost within reach of my hand and worked slowly away as before. This one had proceeded about ten yards when the other one came into view near me and started away. The pair kept up this alternate performance for fully five minutes before they finally ceased. On seeing that I was not to be duped by their actions, they remained quietly on the water about ten yards away until I started again. One of them followed me for some distance before finally disappearing.

The parents seem to be more devoted to the young than many of the other marsh nesting birds. The young crawl from the nest as soon as they hatch and the parent leads them away, always keeping between them and a possible

enemy. On being approached she directs them to the nearest cover, generally a patch of reeds, and as soon as it is reached they all disappear except the parent. A careful watch kept on the edge of the patch will usually reveal her swimming slowly back and forth with only the eyes and bill above water. It is almost impossible to find the young once they have entered the weeds, as they are adept at hiding and remaining motionless.

In August after the young are feathered out and almost fully grown, the grebes in one swamp or pond sometimes assemble in one flock and feed together. The largest number I ever noted was on August 19, 1913, in the same swamp in which the notes of June 26 were made. This flock numbered, as near as could be counted, two hundred. I watched them for some time and saw them eating numbers of the small frogs which swarmed about the water's edge and on the mud flats. Occasionally two would seize the same frog and attempt to swallow it. This would cause a tug of war, in which several others sometimes joined, and often neither of the original contestants finally secured the prize.

Marshalltown, Iowa.

THE ROLL OF THE LOG-COCK OR PILEATED WOODPECKER.

BY ERNEST W. VICKERS.

For several years I enjoyed the rolling call of a Pileated Woodpecker, which from the peculiar resonance of sounding-board carried to an almost incredible distance. The scene was located a mile and a quarter from my home, and impossible as it may appear I have heard the roll when in the house with doors and windows closed; this of course when atmospheric conditions were favorable. Out of doors the sound doubtless carried two miles.

This sounding-board of the Log-cock was the big hollow arm of a great tulip-tree or white-wood (*Liriodendron tulipi-*

fera), usually miscalled "poplar" of the lumbermen, eighty to one hundred feet high, which stood on an eminence between two towns and towards the west end of a strip of timber over two miles long. This big arm was flung westward and parallel with the earth at a height of 50 to 60 feet, and the spot on it where he hammered was barkless, seasoned, hard and white, for it had been used for years.

Long had I heard the drummer ere I located the drum, which I did one early day in spring.

By care and stealth I approached near enough with my glass to observe the bird to good advantage.

His modus operandi was as follows: Sitting upright lengthwise on the limb, grasping it firmly and bracing himself with his tail, poised and with head drawn back and eyes fixed on the spot to be struck; then, making a pass or two, as if about to begin as a skillful penman makes a preliminary flourish, he came suddenly and almost savagely down on the limb; and though the blows were slowly and lightly delivered at first, they increased in speed and force one by one to the highest power, whence they diminished to the close. Thus his roll was composed of a dozen strokes delivered as an ascending and descending climax. These tones were of a peculiar rich, resonant xylophone quality, echoing in ever widening and pleasing circles off through the woods.

After the delivery he would relax, pause as if to note the effect, or more probably to listen for a response from mate or distant neighbor, for this habit may hark back to a time when some such means of "wireless" was necessary in the vast reach of unbroken forest. Thus there were codes ere Morse's invention and ere the white man arrived to plant the poles.

Then he would hop about on the limb a little perhaps, cock his head this way and that to take in the world below, dress his feathers for a time or search for parasites. But, although so deliberate, he did not long forget what he was there for and would gather himself together to smite his musical instrument again. The gravity and intense concentration of this act made it almost ludicrous to the beholder were it not for

his earnestness and preoccupation. With such energy did he hammer that his whole body shook and his wings quivered, while the splendid scarlet of his loose hair-like crest flowed in the bright spring sunshine, added to which his scarlet mustaches gave him a distinguished and savage air.

Later in the season I placed my camera high in a neighboring birch and waited beneath with more or less patience vainly hoping to catch him in the act. But he must have been haunting some distant portion of his range, for he never came near.

Several years since the big tulip-tree came down in a storm and I miss the wonderful roll that used to travel so far. Occasionally I heard his bill on some punky old snag, but it is not probable that he will ever find another sounding board comparable with the old white wood arm.

This is the only Pileated Woodpecker I ever saw beat upon a horizontal limb by habit. This is the only case that has come under my observation where a log-cock has selected a horizontal sounding board.

I afterward sought in the debris of the uprooted tulip for this musical limb, but it was impossible to discover a trace of it more than if so wonderful a thing had been whisked off by magic. It would have been good to have taken its caliber and that of the cavity within and to have examined that smooth hard spot where he had smote full lustily so oft.

The roll of the Pileated woodpecker is one of the most impressive sounds in nature, and among the noblest of spring, being most frequently heard on still, humid mornings when the air seems hungering to transmit sound; the earth is vaporing, mellowing ripening for the plow. The glad strain of the meadow-lark bursts everywhere from the ground, and the cackle of the flicker comes from sunny places. All the woodpecker tribe love to beat the tom-tom in such weather, but the stately roll of Hylotomus easily lords it over all. It is then as the gavel of the speaker calling the Whole House of Nature to order after the defection and chaos of winter.

WINTER CONDITIONS IN NORTHERN OHIO, WINTER OF 1913-14.

BY LYNDS JONES.

Everybody in the middle sections of the United States will remember the early November storm which resulted in blocking traffic and the destruction of miles of telegraph and telephone lines. Any storm or considerable cold so early is unusual and might therefore be expected to have its effect upon the birds of the region affected.

In the vicinity of Oberlin this storm marked the advent of winter conditions as far as the smaller birds were concerned. A good idea of the conditions which followed this storm will be gained from the following extracts from a letter written by Mr. Harry G. Morse, who resides at Huron, Ohio, at the mouth of the river by that name, and within three miles of the marshes which extend eastward from Sandusky. He writes: "It has been rather quiet so far. I don't think the mild winter has had much influence except in the case of the ducks and gulls. I have found both Black Ducks and Mallards since the first of the year, and Bonaparte's Gulls were here until January 11. Saw several flocks of ducks flying south today (February 8).

"Song Sparrows and Flickers have been very scarce since the first of January. I have a record of a Killdeer on February 1, on the beach about a mile west of town. Of the more uncommon winter visitors I have seen very little. Found Snowflakes a few times last fall on the sand spit, and a pair of Lapland Longspurs near the lake December 28.

"Robins, Bluebirds and Rusty Blackbirds, which were found all last winter, do not seem to have stayed this year. Red-headed Woodpeckers are, however, fairly common, as I have recorded about a dozen different birds within a radius of three miles from town."

My own experience is that of the usually common winter birds. The Song Sparrow was entirely absent from most of its usual winter haunts, while scattering Red-headed Wood-

peckers were to be found. Pine Siskins, Redpolls, Snowflakes, Lapland Longspurs, Prairie Horned Larks, Horned Larks, Meadowlarks, Mourning Doves, Northern Flickers, Robins, Bluebirds, and Bronzed Grackles were in about the usual number in and around Oberlin. Reliable reports of Evening Grosbeaks and Snowy Owls were received.

The regular resident birds seemed to be in their usual numbers, but Chickadees, Downy Woodpeckers, and Blue Jays were more concentrated in town and were hard to find in the country. No Carolina Wrens have been recorded since October, but Cardinals are rather more numerous than in former winters.

The natural conclusion, judged from the past winter, is that an early storm of snow accompanied with cold, drives the smaller migratory birds south, but does not seem to affect much the larger birds which are inclined to tarry until the lakes and streams are ice-bound. Thus the Canvasback ducks remained in Sandusky harbor all winter until the severest cold of the winter in late February closed the water completely. It is also interesting to note that the Herring Gulls, which were fed at the wharves of Sandusky during that long cold winter when they must have starved otherwise, congregated there again this winter just as soon as the ice closed the lake, although two winters of open water had intervened.

It is apparent that we know as little about the winter movements and general habits of birds as of any phase of Ornithology. The problem seems to be capable of solution just as soon as we can organize the winter study in a way which will make it possible for students in one section of North America to learn from those studying in other sections what the conditions are which are known to affect the birds and the known food materials. This ought to be possible every winter, but since it appears not to be, ought not the members of the Wilson Club who live in the Mississippi Valley and north to organize for such a campaign of study during the coming winter? It is certainly worth considering with care.

THE EFFECT ON THE BIRDS IN THE OPENING OF THE PARK AND THE BUILDING OF THE RESERVOIRS IN THE VICINITY OF YOUNGSTOWN, OHIO.

By George L. Fordyce.

For the past ten years I have been keeping a definite record of the migratory movement of the birds in Eastern Ohio within a 12-mile radius of Youngstown. The opening of Mill Creek Park, in which there are two reservoirs in the Mill Creek Valley, and the enterprise of the Mahoning Valley Water Company in building two reservoirs in the Yellow Creek Valley has brought about a marked change as to the birds that may be seen in this locality.

Mill Creek Park is a deep gorge, extending about three miles up the lower end of the Mill Creek Valley, with the stream from which its name is derived winding through the center. The source of Mill Creek is some 20 miles—almost directly south of Youngstown. The gorge, the edges of which represent the boundaries of Mill Creek Park, extends about three miles up from where Mill Creek joins the Mahoning River. On either side of this gorge are precipitous bluffs, quite heavily wooded, with hardwood trees as well as a dense growth of Hemlocks. During the spring migration this valley seems like a funnel, which the birds follow in their northward movement to where it narrows down to the park gorge, in which the migrants stop over and are so concentrated that one has a remarkable opportunity for bird observation. The many miles of drives and walks in the park add very greatly to this opportunity.

Youngstown is located in the Mahoning River Valley, and substantially all the territory covered by my observations is in the Alleghenian Life Zone. Mill Creek Park, however, seems to include some of the Transition Zone, and my records show that more than 90% of the warblers which I have listed during the period covering these records have been seen in this park, including some 30 species of this family. With the exception of four species of Warblers, which I mention

below, the others are usually listed annually. The exceptional records are the

Prothonotary Warbler.....May 16, 1911,
Kentucky Warbler.....May 11th, 1909,
Connecticut Warbler.....May 17th, 1906, May 28th, 1907, and May 24th, 1913.
Orange Crowned Warbler.....May 15th, 1909.

My Vireo records are nearly all made in the Park, the only unusual record being that of the Philadelphia Vireo, May 12th, 1912, and May 6th, 1913.

Lake Cohasset, the upper reservoir in the park, was filled with water in 1899, and covers about 28 acres. This lake is rather narrow, with steep bluffs on both sides, and for several years after being filled with water was a stop-over place for many species of water birds. My first water bird records for this locality were made at Lake Cohasset, including the Mergansers, Lesser Scaups, Golden-eye and Ruddy Ducks, also Gulls and Terns. The most important record for this lake was a male and female Surf Scoter that remained from April 21st to April 24th, 1911.

In 1907, Lake Glacier, at the lower end of the park was filled with water, with an area of about 43 acres. This lake is wide enough so that any species of water bird is liable to stop in passing. Within a year or two of the formation of this lake, the water birds almost deserted Lake Cohasset, and my records show that at some time during the past five years, nearly every species of water bird to be seen in this locality has visited this lake, including Grebes, Gulls, Terns, Ducks and Coots. It was on this lake—October 28th, 1913, that I established the remarkable record for Ohio of the Western Grebe. December, 1913, a Loon, Two-Hooded Mergansers, and a Black Duck remained in a small area of open water on Lake Glacier until a day or two after Christmas—really staying until the ice closed in and forced them to leave. White-winged Crossbills, March 3rd, 1907; Crossbills, March 3rd, 1909, and Pine Siskins at different times are among the rare winter visitors that have visited Mill Creek Park.

Lake Hamilton in the Yellow Creek Valley was filled in 1905 with an area of about 100 acres. This larger reservoir greatly increased the numbers of water birds that stopped over in this locality, and some years there have been thousands of ducks on this body of water for one or two days at a time. My first and only record for the Black-crowned Night Heron was along the shore of this lake April 21st, 1911.

In 1910, Pine Lake, with an area of 400 acres, near the head waters of Yellow Creek and about 12 miles south of Youngstown, began to fill with water, and during the spring migration of 1911 great numbers of water birds stopped over for days and weeks at a time. This was probably on account of the decaying vegetation in the water, which furnished unusual feeding conditions. Since this larger reservoir was filled the water birds have not been as abundant at the other reservoirs or visited them as frequently. I am satisfied that during the year 1913 I observed more water birds and shore birds about Pine Lake as to numbers than during all other years of observation in the Youngstown district put together. My first record for the Canvas-back, April 9th, 1913, and a few later dates, was on this lake. On April 15th, 1913, more than 100 Horned Grebes were on the lake at one time. October 31st, 1913, while standing on the east shore of Pine Lake with Mr. John P. Young, about 200 Canada Geese and a flock of 13 Blue Geese circled over the lake for a time, and then continued their southward journey. This is my first and only record for the Blue Goose. Previous to 1913 I had not recorded the Wood Duck, except April 2nd, 1911, when a male visited Mill Creek Park. However, during the fall of 1913 I listed three Wood Ducks—September 12th, and about 30 September 14th at Pine Lake. Some of these, or others, remained at this lake until September 28th. During the season of 1913 I added to my list quite a number of species of shore birds for this locality around the shores of Pine Lake: Golden Plover, October 23rd; Semi-palmated Plover, May 9th; Baird Sandpiper, May 10th; Red-backed Sandpiper, October 23rd; Semi-palmated Sandpiper, May 10th; Sanderling, September 14th. While these were my first records for

these species in this locality, all the other and more common shore birds were quite abundant during the spring and fall migration about the shores of this lake. The Pipit and Savannah Sparrow were frequently seen during the summer of 1913.

As near as I can estimate from my records there are over 60 species of birds that have been added to my list in this locality since the opening of the park and the building of these reservoirs.

It will perhaps emphasize the opportunity for bird observation in the vicinity of Youngstown to refer to all-day lists last May, when Prof. Lynds Jones was in the field with me: May 9th, 1913, 116 species; May 10th, 1913, 113 species, nearly all of which were in the park or about the reservoirs. For the year 1913 we listed 196 different species of birds in the vicinity of Youngstown. Previous to the building of these reservoirs an all-day list of 75 species was considered very good, and a yearly list of 130 species, including residents and migrants, was about the limit.

With such favorable conditions for bird study, the people of Youngstown and vicinity have become quite generally interested in the birds. At the present time we have a number of men and women who are reliable in observation and identification, and a great many with a good general knowledge of the birds.

A BRIEF HISTORY OF THE WILSON ORNITHOLOGICAL CLUB.

BY LYNDS JONES.

The actual founding of the organization out of which this Club grew occurred on December 3, 1888, when President Harlan H. Ballard, of the Agassiz Association, issued a charter to the Corresponding Wilson Ornithological Chapter of the Agassiz Association. The movement was inaugurated by Mr. J. B. Richards, of Fall River, Mass., who was elected

its first President, with the writer as Secretary. It is pretty clear that this Chapter grew directly out of the Young Ornithologists' Association, which was organized some years earlier by Mr. L. O. Pindar, of Hickman, Ky., in an informal way, and became a formal organization on May 29, 1886, by the adoption of a constitution.

Of the 36 members on the original roll of the Wilson Ornithological Chapter of the Agassiz Association but four are on our present roll. They are: Frank L. Burns, Berwyn, Pa.; John H. Sage, Portland, Conn.; R. M. Strong, University of Chicago, and Lynds Jones, Oberlin, Ohio. Mr. Burns has held all of the offices of the organization, including the editorship of its official organ for the year 1901, and has written the most notable papers which the Club has published. Mr. Sage has long been a member of the Executive Council. Dr. Strong has also occupied every office and in addition handled the business end of the official organ in 1892, when the Wilson Quarterly succeeded the Semi-Annual as our official organ. The writer has tried to do his part in keeping the movement going.

Perhaps the greatest interest clusters around the various publications which have served as the official organ of the organization, but mention should be made of the change in the name which resulted in casting loose from the parent Agassiz Association, late in 1902, and reorganizing under a new constitution and adopting the present name. The first organization had been avowedly for the purpose of bringing together, in a mutual sort of way, the younger ornithologists of this country, but with the passage of time so many grew to man's estate that the inevitable must happen, so the apron strings were cut. To those who have followed the career of the Club it will seem clear that this cutting loose was necessary for the further growth of the cause which the organization represented.

The first official organ of the then Agassiz Chapter was the Curlew, a twelve-page 3x5 printed page monthly published by O. P. Hanger, Orleans, Ind. This little paper enlarged the size of page to 4x6½ with the sixth number, issued the

seventh and then suspended, in April, 1889. Beginning with January, 1890, the Ornithologists and Oölogists' Semi-annual, published by W. H. Foote, Pittsfield, Mass., became the official organ until its suspension with the first number of the third volume, April, 1891. Beginning with the fourth number of the first volume of the Taxidermist, edited by E. W. Martin and managed by C. F. Mignin, both of Akron, Ohio, space was used until its suspension with the May number, 1892. Beginning with April, 1892, Dr. Strong undertook the task of publishing The Wilson Quarterly, which was the successor of the Ornithologists and Oölogists Semi-annual. After publishing the July number the funds available were exhausted, and financial support was lacking, so suspension became necessary. In January, 1893, a much smaller publication, known as "The Journal," was issued, under the same management, the writer remaining the editor, and after two numbers it also suspended because of lack of funds. This ended, for the time being, the efforts of the organization to publish its own official organ. Lack of support is the proper spelling.

President Ballard furnished space in the Popular Science News for May, 1893, for a report of the Owls, which was compiled by the writer. Following this report and the suspension of "The Journal" communication between the members was maintained by means of mimeographed sheets, done on the writer's typewriter and the mimeograph of the Oberlin Department of Zoölogy.

Beginning with February, 1894, the present series of Bulletins was begun by the then Secretary, William B. Caulk. These were post card size, and the three which were issued bear the dates of February, May and July, 1894. To supplement these several printed postal cards were sent out.

Two reports had been prepared and it was thought best to publish them as a fitting end to the organization. The two were the "Warbler Report," issued as Bulletin No. 4, January 15, 1895, by the writer, and "The American Crow," as Bulletin No. 5, by Frank L. Burns. These were mostly financed by the writers of the reports. Instead of killing the

organization, as we expected, these reports seemed to infuse it with such life that the writer of this sketch was encouraged to plan for the publication of a modest official organ to be known as The Wilson Bulletin, with a bi-monthly appearance. Accordingly the publication was begun in January, 1896, as a twelve-page magazine with a printed page of 5x3½, brevier type. This publication continued through 1899, with regularly recurring deficits which the editor met for the good of the cause, with some occasional assistance from Mr. Burns and others.

During the several years preceding 1900 Mr. Burns had been working on an exhaustive study of the Flicker, and the editor upon a study of the songs of the warblers. Both of these papers were ready for print by the beginning of 1900, and plans were made for putting them into print. The deficits were becoming so onerous that it was decided to issue these two reports as a grand finale and disband the organization. But history repeated itself and it was found that a continuance of the publication was demanded by the membership. The editor was not able to spare the time necessary for the preparation of a bi-monthly, so it was decided to increase the size of the printed page and increase the number of pages in order to make a quarterly magazine of reasonable size. Volume 12, 1900, thus became the first of the enlarged volumes, as at present.

An unusual stress of work during 1901 precluded the possibility of the present writer carrying the Bulletin during that year, so Mr. Frank L. Burns, of Berwyn, Penn., edited and published that volume. Beginning with the year 1902 the writer has both edited and published the Bulletin. It has been too hard a task. For the lifting of the burden of publishing from his shoulders he is indeed grateful, and predicts a future full of great achievements for the Club which the change of policy will make certain. The help which has been given, both financial and of other but not less real sorts, he is certain not to forget.

The thought that inspired the original founders of the organization had its roots in mutual helpfulness among the

younger ornithologists. Regular gatherings were assumed to be impossible, hence the expedient of coöperation through correspondence was hit upon as the instrument to bring about the results aimed at. That good has resulted from this necessarily rather loose organization cannot be denied, as witness the several papers of no mean value which were based upon this idea of coöperation by correspondence.

The time came when a change was demanded, and it was made. Now the time has come when another more profound change is demanded, and it has been made. That it will result in a decided forward movement those who have lived the life of the Club are confident.

DIE VÖGEL—HANDBUCH DER SYSTEMATISCHEN ORNITHOLOGIE.

BY DR. ANTON REICHENOW.

A CRITIQUE BY W. F. HENNINGER.

(Read at the meeting of the Wilson Ornithological Club, at Chicago, February 6, 1914.)

The first volume of this work contains one map, 185 cuts and 529 pages.* The writing of this phenomenal work was caused, according to the author's own words, by the fact that in spite of the richness of German ornithological literature there was no German "Handbuch" or Manual of Systematic Ornithology in existence that took into consideration all the existing forms of birds. To supply this obvious need Dr. Anton Reichenow has presented us with a splendid work, that gives us in terse language as complete a Manual as seems necessary for placing a bird in a system of classification and in its proper relation to other forms. It is limited in its scope, however, as to subspecies and closely related species. Still all European birds, all the birds of the German colonies

* The second to be published in the summer of 1914.

and all of the more important species are given. The paper on which it is printed is good and the binding, as in all European works, perfect, in great contrast to the majority of American works, with their absolutely miserable binding. The type is clear and errors are not to be found, no index of errata being necessary.

The general notes occupy 66 pages, with an extra page of references to works on systematic ornithology and current literature, among which the Auk and Condor of American journals are mentioned. This chapter contains information on the skeleton, muscles, brain, senses, digestive apparatus, respiratory and vocal organs, vascular system, genital organs, eggs, time of incubation, feathers, colors, moult, uropygial glands, bill, feet, caruncles and phosphorescent tracts, flight, ability to swim, voice, mating, nesting, care for young, nutrition, propagation of plants by birds, intellectual qualities, bastardy, mimicry, age, numbers of species, faunas and geographical distribution, migration, height of same, velocity of flight, origin, genealogy, system of classification, nomenclature, abbreviation of authors' names, terminology given in German, Latin, English, French and Italian, and instruction as to measurements.

In spite of its brevity this chapter contains for instance splendid explanations of terms as dromaeognathous, desmognathous, schizognathous, aegithognathous, schizorhine, holorhine, diastataxism and eutaxism, so that in short terms we have here that for which otherwise an extensive library is needed. Feather change without moult or aptosochromatism is disposed of with the statement that a feather once completed is apparently no longer in any connection with the circulation of the blood. However, such a change without moult seems to take place in the appearance of the salmon color on the lower side of Mergus merganser and americanus, and on the head, back and lower neck of Bubulcus ibis in the spring.

Special attention is paid to the forms of feet found in birds, and later in the explanation of the system of classification this becomes of the utmost importance.

The intellectual or psychic qualities of the birds are neither anthropomorphised nor considered to be merely reflexive. The brain activity of birds is stated not to differ from human thinking in *quality* but only in quantity. Attention is called to the fact that the young bird will build its nest as carefully as the old one, but on the other hand, the young bird learns to know danger and perfects his song by imitating older ones. *We* incline to the opinion that of the four essential qualities of human brain activity, i. e., conception, memory, perception and language, birds certainly have a conception of things and memory, and this explains the imitative ability, but that the bird lacks perception and language. At times it seems as if birds do have a perception of things, e. g., the Crow, but upon closer investigation we will find in the majority of cases it is only a matter of conception and memory.

The Faunas (10 or 11 in number) as given are:

1. A North Pole Fauna. Characteristic forms are the Alcidae, Colymbidae, Stercorariidae, the genera Rissa, Xema, Pagophila and Rodostethia; some species of Ducks and Tringidae, Lagopus, Falco, Nyctea and Passerina.

2. The South Pole Region. Characteristic forms: Spheniscidae, Procellariidae, a few Terns, Ducks, the Sheathbills (Chionidae) and but one land bird, Anthus antarcticus.

3. The Palaearctic Region, with no peculiarly characteristic forms.

4. The African Region, south of the 20th parallel north latitude. Characteristic forms: Families Scopidae, Balaenicipidae, Musophagidae, Coliidae and Struthionidae. This region is also the center of abundance of many other forms, as the Larks, Bustards, Weaverbirds, Vultures and others.

5. The Madagascar Region, characterized by the Mesitidae and many peculiar genera of Parrots, Cuckoos and Oscines.

6. The Indian Region, characterized by the Pheasants, Peafowls, Argus Pheasants, certain Parrots, the Eurylamidae, Chloropsidae, Perirocotidae and Dicaeidae.

7. Australian Region. Characteristic forms are the Dromaeidae, Casuariidae and Paradiseidae.

8. New Zealand Region, characterized by the Apterygidae, Nestoridae and Stringopidae, several Ducks, Rails, Plovers, Hawks and others.

9. Nearctic Region, North America from the limit of tree growth in the north to northern Mexico, with the exception of the extreme southern part of Florida. No peculiar forms.

10. Neotropical Region, the remainder of the Western Hemisphere, is by far the richest in bird life and bird forms and also in peculiar families: Rheidae, Palamedeidae, Eurypygidae, Aramidae, Thinocoridae, Tinamidae, Opisthocomidae, Cracidae, Rhamphastidae, Bucconidae, Galbulidae, Momotidae, Cotingidae, Dendrocolaptidae, Formicariidae, Pteroptochidae, Dacnididae. Also as having the center of abundance there: Conuridae, Trochilidae Tyrannidae, Icteridae, Tanagridae.

11. Birds of the Ocean.

The migration of birds is then spoken of and no attention whatever paid to the fallacies of a Gätke in his "Birds of Heligoland," and the migration routes in general are given. As to the origin of bird migration Weissmann's theory (1878) is considered the most plausible one, namely, the emigration of birds after the glacial period from the tropics during the warmer season of the year and the return at the approach of cold weather along the same routes, which in time became an established habit through natural selection among those who possessed the inherited custom.

We beg to differ with the learned author. We think that Mr. Frank M. Chapman has so far given the best reason for the migration of birds. "Auk," XI, 1894, pp. 12-17, shows that the causes of bird migration are internal and not external, that many animals have an instinctive desire for seclusion during the season of reproduction, and that in the case of Sea-birds, for instance, dissection will show an enlargement of the sexual organs and that it is this physiological change which warns the birds that the season of reproduction is at hand. "The object is the same with the Warbler, as well as with the Sea-birds. Dr. Allen later on calls attention to the fact, the great fundamental fact, that the life of animals,

and especially of migratory animals, is made up of annual cycles, as is the life of plants, which have their fixed and determinate seasons for flowering and fruiting. This is the key to the impulse of the spring migration, of which the fall migration is but the necessary complement, inasmuch as in most instances the winter conditions of the breeding grounds of most species are prohibitive of their continued residence therein throughout the year." ("Auk," XXV, 1908, pp. 332-333.) These facts and conclusions are so correct and final that no other theory is necessary. As the "Auk" is numbered among the journals used by Dr. Reichenow, we fail to understand why he overlooked these investigations of Mr. Chapman. In fact, I do not believe that he overlooked them, but it seems impossible to convince any of the European savants that anything good can come out of America. It is high time that a good many of them should have their eyes opened to the fact that the "uneducated Americans" are doing a goodly piece of the world's scientific work, but from personal experience I can say that they die hard. Several pages are devoted to the fossil birds and the classification of birds according to Fürbringer is quoted in full. The writer then proceeds to give his own system. He says that a system based upon the internal organs has a high value, but that the internal organs are just as much subject to changes as the external parts through the conditions of living, food and motion. The author says that such genealogical rows as Fürbringer's have a high value to give further investigations the right direction, but can *not* serve as systems which have the practical value to give a clear perspective of the masses of forms so as to learn to know the manifold forms. For this there is needed a "logical system" based on a few apparent characteristics. The genealogical representation, which should teach how the various forms have developed out of one another, presupposes the knowledge of the separate individual forms, while the system should first teach us the knowledge of these forms. In a practical system the principal point is to limit the coördinate groups as much as possible in regard to number, and rather to create subordinate categories and in a logical way to

divide every major group into smaller ones down to the species. System and genealogy pursue absolutely different purposes and must be coördinate.

He points out the contradiction between calling the former a natural system and the other one an artificial one, because nature builds up no such categories, but creates individuals only. Nature has the desire to vary, the inclination to divergence and the wiping out of dividing lines. The point is evidently well taken, but we can not see why later on he then speaks against Trinomialism, at least in part.

Dr. Reichenow's system is as follows:

1st Row. *Ratitae: Short-winged birds,* i. e., birds without a keel on sternum and rudimentary wings.

2nd Row. *Natatores: Swimmers.* Characteristic is the webbed foot. Exceptions: Anseranas with split toes and Fregata.

3rd Row. *Grallatores: Stiltfooted birds.* Characteristic is the foot, tarsus not feathered, bill without cere. Exceptions: Scolopax, which has the tarsus feathered, webs between the feet have Droma, Recurvirostra, Cladorhynchus and Phoenicopterus.

4th Row. *Cutinares: Cerebills.* Bill with a cere, feet often raptorial or fissorial. A cere is found in the Parrots, but their feet are not raptorial.

5th Row. *Fibulatores: Pair-toed birds.* Birds with climbing feet.

6th Row. *Arboricolae: Treebirds.* Forms of feet are characteristic; bill without cere, except Caprimulgidae, which have an incomplete or rudimentary cere.

This system is certainly scientific and simple. Of course difference of opinion will continue, but Dr. Reichenow's is as good as any that has been advocated and has the advantage that it is more in conformity with the classification of other classes of animals.

Dr. Reichenow then proceeds to tell us that the last international congress of zoölogists has modified the law of priority in regard to names, i. e., to retain certain well-established names, as Falco, Buteo Psittacus and others, regardless of

the law of priority. This will be received with great satisfaction by a great many scientists and perhaps all amateurs. The Reviewer thinks differently on the subject. He believes that the law of priority should be rigidly enforced. The time will come, and is nigh at hand, when most of the disputed cases will be settled. It is not honorable to take away from some man the right and honor of having coined a name, though it may cause *us* a good deal of inconvenience to find out to whom that first right belongs. Because men have blundered in the *past,* or have been careless, is no reason why *we* should not right things and give honor to whom honor is due.

Dr. Reichenow also comes out against Trinomialism, especially in regard to geographic variations. Undoubtedly sins along this line have been too frequent, but the reason is simply because many geographical variations have been named that deserved no name whatever; not that the differences do not exist, but the utility of name-giving ceases in such cases, e. g., our Song Sparrows. This fact is pointed out in the great work, "The Macrolepidoptera of the World," and what holds true in regard to butterflies, where the differences are much less conspicuous than in birds, is true in a far greater sense in regard to birds. Outside of these geographical variations, Dr. Reichenow is, of course, a trinomialist. The relation of a geographical variation to its main species, however, must find some kind of expression, and, if not trinomials, what then? Any other way would be far more cumbersome! The rest of the general remarks are of minor importance.

The Ratitae are divided into four orders and five families, and, of course, include the Ostriches, Rheas, Emus, Cassowaries and the Apteryges.

The Natatores include the Penguins and Divers (families Alcidae, Colymbidae), the Longipennes (Albatrosses, Fulmars, Petrels, Shearwaters, Gulls, Terns), all the Steganopodes, and all the Lamellirostres, five orders and fourteen families and ten subfamilies. While we do not expect to have all of the American birds treated as stated in the preface of the work, we note the following: In the enumeration of the Alcidae

the series breaks off abruptly with Simorhynchus cristatellus. Aethia pygmaea and pusilla could easily have been mentioned to complete the series, Ptychorhamphus aleuticus not being recorded at all, while several rarer forms are given. The common Loon is mentioned from Greenland only, and the Blackthroated not credited to America at all. We consider this a grievous fault because it creates the impression that both of these species are not found on the North American continent at all, and while, of course, any American ornithologist knows better, some of the younger European beginners, who will no doubt use the book in their studies, will get an incorrect idea. In accordance with Dr. Reichenow's ideas as to trinomialism, Colymbus nigricollis cal. gets credit as a full species, as, for instance, among the Geese, Chen Hyperborea nivalis and Branta C. Hutchinsii, Colymbus holbölli is not given; if considered identical with griseigena, the geographical habitat of the latter should be extended to cover America. None of the Albatrosses is credited with an occurrence in America. Among the Petrels Oceanodroma hornbyi is given a place, while many other more common forms are omitted. We do not understand why such an undue prominence should be given this form and others not even mentioned. No distinction is made between the genera Megalestris and Stercorarius, and, we think, justly so. Under Procelsterna only two species are mentioned; the new form from Necker Island is not recorded. No record of Hydrochelidon n. surinamensis is found; if considered identical with nigra, the habitat should include America. The Frigate birds are credited with laying two or three eggs, on what authority we know not. The American ornithologists have found them laying only one egg. For the Surf Scoter the generic name Macrorhamphus Lesson is chosen. Now, as far as we know, Lesson's "Traite d'Ornithologie" was published in 1831, while in 1817 already T. Forster, in his "Synopsit. Cat. Brit. Birds," used the name for the Dowitcher, the specific name of which (griseus) dates back to Gmelin, in 1789; and under the name for the Dowitcher we again find Macrorhamphus, this time quoted from Leach.

The Grallatores are divided into three orders: *Cursores,* with four suborders: Limicolae (families Charadriidae (subfamilies Chioninae, Haematopinae, Cursoriinae, Charadriinae and Oedicneminae), Dromadidae (African), Scolopacidae (subfamilies Himantopodinae, Totaninae and Scolopacinae); suborder Calamicolae (families Rallidae (subfamilies Rallinae, Gallinulae and Fulicinae), Aramidae, Jacanidae, Eurypygidae and Mesitidae); suborder Arvicolae (families Otididae and Gruidae); suborder Palamedeae (families Palamedeidae). Order *Pelopatidae,* with one family: Phoenicopteridae. Order *Gressores,* five families: Ibididae, Ciconiidae, Scopidae, Balaenicipidae and Ardeidae.

This row is very complete, though we would like to have seen Himantopus mexicanus, Totanus flavipes and Totanus solitarius mentioned, as well as others. The very peculiar form, Numenius tahitiensis, should certainly not have been omitted. Several Japanese forms are also missing which we would like to have seen embodied in the work. Nyeticorax nycticorax is not distinguished from naevius, and here the Reviewer thinks Dr. Reichenow right and our American ornithologists wrong.

The Cutinares are divided into five very different orders: 1. Deserticolae, with three families, none of which is nearctic. 2. Crypturi, with one family, neotropical. 3. Rasores, with five families, of which the second Cracidae is represented in our fauna by the Chachalaca, the fifth and sixth by the Grouse, Quails and Partridges. Here the wrong name, Pediocætes, appears again instead of Pediocœtes, while we know that Baird originally and correctly wrote Pediocœtes, as Dr. Gill has pointed out in the "Auk." 4. Gyrantes, the Pigeons, with four families, of which the second and third only are found in the nearctic region. Of Chamaepelia no subspecies are given, and the Island of Jamaica is the only habitat mentioned. Leptoptila is, of course, spelled correctly, and not wrong, like in our check list, but not attributed to the nearctic region, as is the case with several others. 5. Raptatores, two orders, Accipitres and Striges. The former order has four families: Cathartidae, Vulturidae, Serpentariidae and Fal-

conidae. The Cal. Condor is said to be apparently extinct. We can assure Dr. Reichenow that it is by no means extinct. Accipiter cooperi is given, but not velox. Buteo lineatus is likewise omitted, but the rare Buteo brachyurus is fully treated. The treatment of the Gyrfalcons will also not meet with the approval of our ornithologists. Striges: All of the subspecies of the Strix flammea are given, but nothing is said of the North American form, Pratincola.

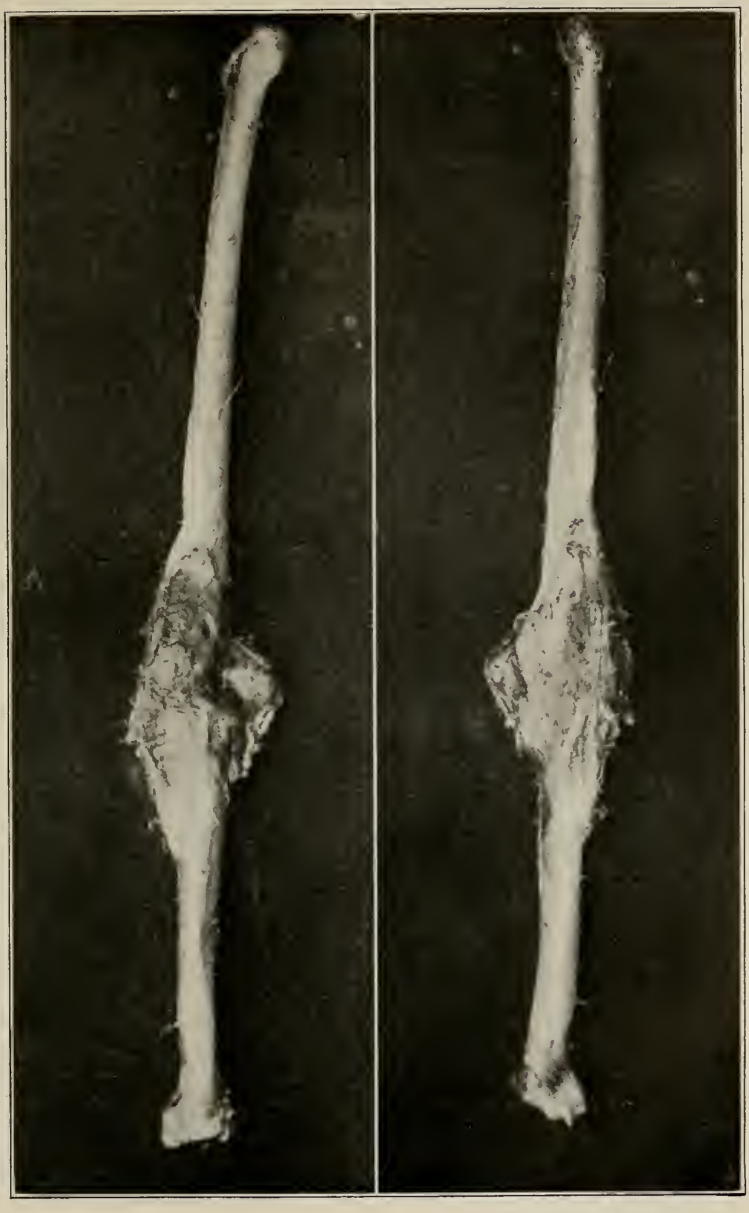
The Fibulatores are divided into two orders: the Parrots and the Scansores. Only the former are discussed in the present volume and our two forms are duly given, but it should have been stated that the Carolina Parrakeet is apparently extinct.

It is, of course, a very unpleasant task to call attention to such minor details and defects in a work of this kind, and they certainly do not detract materially from the value of the work, but in a critical review the minor points as well as the major ones should be taken into consideration and due attention given them. As it is, however, Dr. Reichenow's book will long stand out as a work of phenomenal learning and knowledge and his system of classification will be recognized as not only thoroughly scientific, but also as eminently practical. He has presented us with a work for which we all should be very thankful and which any student of ornithology will do well to use in the pursuit of his studies and investigations.

BIRD SURGERY.

The accompanying illustration represents the wing bone of the Greater Snow Goose (Chen hyperborea nivalis) found when skinning the bird in the fall of 1912. The fracture, made by a No. 4 shot, must have been made either during its flight south or else upon its feeding grounds during the summer. The illustration shows how well nature heals its wounds and how quickly.

HAROLD H. BAILEY,
Newport News, Va.



THE WILSON BULLETIN

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The result of the vote in favor of ratifying the action taken at the Chicago meeting to provide for a regular annual meeting, and the ratification of the list of officers tentatively chosen at the meeting, is most gratifying. There are suggestions for changing minor points in the proposed constitution which will be taken up at the next annual meeting. There was no dissent of the list of officers nominated. Their names appear above. The total vote to date has reached 72, with all approving.

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A perusal of any number of the "Auk" brings out the fact clearly that at least in the eastern sections of the country there are many unusual

occurrences of birds. While it is true that more work has been done in those sections, and therefore probably better ground for knowing just what occurrences are unusual, we believe that in this particular the East does not outrank the Middle West. If all of the unusual occurrences for the region which we are supposed to especially cover are written up and sent in for publication, that department of the "Wilson Bulletin" would assume the importance which it should assume. Fresh notes of this sort right from the field not only add a peculiar interest to the magazine, but also go to show the activity of the folks who live and work in the region. Send your notes in.

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The virtual reorganization of the Wilson Ornithological Club from a purely corresponding organization to one which will hereafter hold annual meetings marks an epoch not only in the organization but as well in the central districts of North America, which is the particular field of the organization. The region has witnessed the rise and fall of various organizations of a local character, but none has ever appeared even for a short period which served to weld together the men and women of the region who are interested in the study of birds and who are working in the same field. With such an instrument there should be, is certain to be, as substantial a growth here as we have seen along the two coasts where it has been possible, for years, for folks of the same mind to get together and work together.

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Before the next number of the "Bulletin" is in the mails the opportunity will come for all of us to undertake the intimate study of one or more pairs of nesting birds. By how much would our knowledge of the life history of even the Robin be advanced if somebody could have the opportunity to compare the accounts of the nesting activities of ten pairs of Robins sent in from as many different localities! Perhaps not all of us have the training which is necessary to carry on such intensive studies, but any of us can add to our sum total of knowledge in this field by painstaking effort. We earnestly hope that there will be many careful studies of the nest activities of many species during the coming nesting season.

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At the Washington spring meeting of the American Ornithologists' Union there is to be a discussion concerning insectivorous birds—as to whether they are or are not decreasing in numbers. To supplement this discussion it would be valuable if a large number of people from the central districts would give their opinions on this topic. The editor will undertake to prepare such matter for publication in the June number of the "Bulletin" if such reports are sent in to him. It is a vital subject and should receive our earnest attention.

In entering upon the plan of having the offices of editor and business manager presided over by different individuals and the office of publication transferred to Chicago, Ill., while the office of the editor remains at Oberlin, Ohio, there is certain to be some delay until we become adjusted to the change. We are certain, however, that in the long run the change will work to the great advantage of the "Bulletin" as well as to the Club of which it is the official organ. A little more time must be allowed for getting copy to the printer and for the correction of proofs and their return. But if every contributor will get his copy to the editor by the fifteenth of the month preceding publication the wheels will be seen to run smoothly and each issue will be out on the date set.

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The "Auk" is entering upon its 31st volume, the "Wilson Bulletin" upon its 26th volume, and "Bird-Lore" and "The Condor" upon their 16th. The Wilson Ornithological Club has actually been publishing its own official organ for 22 years, and the present number marks the beginning of its 21st volume under its present title. It has witnessed the birth, growth and death of many worthy efforts of local organizations. It is outranked in age only by the "Auk" and the "Oölogist." From small beginnings it has gone steadily forward until it deserved to rank among the few survivors of a once numerous host. Its future was never brighter.

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The "Bund Deutscher Forscher," President Georg August Grote, Hanover, Germany, has arranged with the Rev. W. F. Henninger, of New Bremen, Ohio, to publish a book on the North American birds in the German language, entitled "Ne-Arktisches Vogelleben," the same to contain the life histories of the North American birds, i. e., of all those birds which are found to breed in the ne-arctic region, waifs and subspecies to be described and recorded but not to receive an exhaustive treatment. The work is to be illustrated by about 150 colored plates and numerous photographs and to be published in about 35 to 40 parts. The classification used will be that of Dr. A. Reichenow, in order to be in accord with German investigations. If sufficient subscribers are found after the first part is issued, which will be about June the first, the work will be continued. Such men as Prof. G. Eifrig, Lynds Jones, F. C. Willard, of Tombstone, Ariz., Oscar E. Baynard, of Clearwater, Fla., and Isaac E. Hess, of Philo, Ill., will assist Rev. Henninger in the work, besides many other noted ornithologists. The work will be authentic in every particular, and should find numerous subscribers in this country as well as in Europe. The price will be one mark and 50 pfennig in Germany, and will come to about 40 cents a part in this country. Subscriptions will be received by the president in Hanover, or by Rev. W. F. Henninger, New Bremen, Ohio. Later on the agency for America will be transferred to some German publishing house in America.

Minutes of the First Meeting of the Wilson Ornithological Club

The first session of the first meeting ever held by the Wilson Ornithological Club was opened on Feb. 5, 1914, at 10 o'clock a. m. at the Academy of Sciences, Lincoln Park, Chicago, Illinois. In the absence of the president and vice-president, the secretary, C. W. G. Eifrig, called the meeting to order and introduced Mr. F. C. Baker, the curator and acting director of the Academy, who welcomed the club on behalf of the management of the institution, extended the liberties of the academy to the club and wished it success in its deliberations. The secretary, on behalf of the club, thanked Mr. Baker for his kindly, well-chosen words.

The first business for the meeting was the election of a temporary chairman, which was done by selecting Dr. T. C. Stephens, of Morningside College, Sioux City, Iowa. The secretary then read a tentative order of business for the meeting. Resolved that this be more or less closely adhered to.

Concerning the election of officers, it was resolved to have the members of council present at the meeting submit at one of the next sessions a list of nominations for the various offices, also that they first pass on the proposed candidates for active and associate membership.

Then the matter of the "Bulletin," the official organ of the club, was taken up. The editor, Mr. Lynds Jones, was called upon to address the club on the status and needs of our publication. He gave a résumé of the published transactions of the club and of the club itself from the beginning, showing the ups and downs in the life of both and the difficulties the editor has had to contend with, these latter being mostly of a financial kind, often imposing great hardships and sacrifices on him. Further deliberation of this matter was postponed to the afternoon meeting.

Next the treasurer, the Rev. W. F. Henninger, of New Bremen, Ohio, read a detailed report of the finances of the club for the last five years. This again told a story of financial storm and stress, but ending with the statement that for the first time in the history of the club there was a balance amounting to $43.00, instead of the usual deficit. The report was adopted. Then the secretary reported on the membership of the club, which shows the experiences of similar clubs the world over, viz., of losses in membership due to the lack of interest or the non-payment of dues, which are, however, more than offset by gratifying accessions to the membership. Especially have some members in Iowa been busy of late in increasing the membership by new recruits. Resolved, that the list of members, together with the reports of the officers, be annually printed and sent to the members.

Since the holding of meetings is a new departure in the life of the club, making it essentially a somewhat different kind of organization,

for which no provision has been made in the constitution, the advisability of drafting a new or revised constitution was next broached. All the speakers were unanimous in the conviction that the time was ripe and opportune for broadening and extending the usefulness of the club and its official organ, as well as for increasing the membership, if only properly organized, systematic efforts were made. Here the discussion was adjourned and resolved to hold the afternoon meeting from 2 to 4:30 o'clock.

AFTERNOON MEETING, FEB. 5, 1914.

The meeting was called to order by the chairman, Dr. T. C. Stephens. The matter of the "Bulletin" was again taken up and Prof. Lynds Jones spoke at length on the finances and literary contributions for the same. Resolved that an auxiliary editorial committee be formed, composed of one or more members in each state and province in the natural territory of the club, i. e., the interior of North America, such members to see to it that field notes and other pertinent articles from their respective states or provinces be regularly sent for publication to the editor. The nominating committee is to nominate the members of this committee also.

In order to relieve the editor of some of the too great burdens he has hitherto borne in connection with the editing and publishing of the "Bulletin," it was resolved to create the office of business manager for the "Bulletin." Resolved, to appoint a committee for revising the constitution, said committee to embody in the draft the changes so far adopted. The chairman appointed the following gentlemen: Dr. R. M. Strong, Chicago, chairman; Prof. L. Jones and the Rev. W. F. Henninger.

Resolved, to appoint a standing committee to make a campaign for increasing the membership. The following were elected: The chairman, Dr. T. C. Stephens; Messrs. J. H. Fleming, of Toronto, Ontario; O. M. Schantz, of Chicago, Illinois.

Resolved, that the club look upon as its special field of investigation the interior of North America, from the Gulf to the Arctic Ocean, including the Great Lakes.

Resolved, that regular rates for reprints of papers appearing in the "Bulletin" be secured and published.

Adjournment followed, after which the members inspected the exhibits of the academy, especially the unique celestial sphere.

Members present during first day: Dr. T. C. Stephens, Prof. Lynds Jones, Rev. W. F. Henninger, Mr. E. W. Johns, of Kingsley, Ia.; Mr. F. M. Phelps, of Elyria, O.; Mr. Ruthven Deane, of Chicago; Mr. O. M. Schantz, Mr. Geo. Fordyce, of Youngstown, O.; Mrs. Irene G. Wheelock, of Chicago; Mr. G. A. Abbott, of Chicago; Dr. R. M. Strong, of the University of Chicago; Mr. C. J. Hunt, of Chicago, and the secretary, C. W. G. Eifrig.

FRIDAY, FEB. 6, 1914.

The chairman called the meeting to order. The secretary read the minutes of the two meetings of the day before, which were approved.

First the nominating committee, composed of Mr. Lynds Jones, Rev. W. F. Henninger and the secretary, reported and submitted its nominations. Resolved, that the secretary cast unanimous ballot for the following officers: President, Dr. T. C. Stephens; vice-president, Mr. G. L. Fordyce; secretary, Mr. O. M. Schantz; treasurer, Mr. P. B. Coffin, 3232 Groveland Ave., Chicago, Ill. Resolved, that the election of a business manager be postponed.

The following new members and associates were elected: Active, Dr. Joseph Grinnell, Berkeley, Cal. proposed by Prof. Lynds Jones; Mr. E. A. Cleasby, Portage, Wis., proposed by Dr. T. C. Stephens; Mr. F. M. Woodruff, Chicago, Mr. B. T. Gault, Glen Ellyn, Ill.; Mr. K. W. Kahmann, Chicago, Mr. F. A. Schantz, Berlin, Ont., proposed by the secretary. Associate: Mr. Wier R. Mills, Pierson, Ia.; Mr. Arthur A. Osborne, Peabody, Mass.; Mr. E. W. Johns was promoted from associate to active membership; Mrs. I. G. Wheelock, in addition to being an active member, became a sustaining member.

Resolved, to elect the following as members of the auxiliary editorial committee: For Illinois, O. M. Schantz and I. E. Hess; Indiana, R. C. Norris and A. W. Butler; Ohio, F. M. Phelps and Dr. B. R. Bales; Michigan, A. D. Tinker and N. A. Eddy; Wisconsin, Dr. R. M. Strong and Mrs. Ioda Malin; Minnesota, Dr. T. S. Roberts; Iowa, Prof. I. N. Gabrielson and Miss Althea R. Sherman; North Dakota, Adrian Larson; Pennsylvania, Frank L. Burns and W. E. Clyde-Todd; Canada, P. A. Taverner and L. McI. Terrill; Kansas, Dr. W. I. Mitchell and the Rev. P. B. Peabody; Louisiana, G. S. Guion; Florida, O. E. Baynard; Texas, Dr. A. R. Shearer.

Note: This is at the same time to serve as the official notification to the members of this standing committee of their election.

Resolved, that this committee be active also in increasing the membership of the club, under the standing membership committee.

Resolved, that the secretary prepare resolutions of thanks to the officials of the Academy of Sciences. Resolved, that we tender our thanks to the editor of "The Wilson Bulletin," Prof. Lynds Jones, for his labors and sacrifices in behalf of the club and that he be reimbursed as soon as the finances of the club allow it.

Adjournment followed.

In the afternoon session the following papers were read: A critique of the latest systematic work on ornithology of Dr. Reichenow, by the Rev. W. F. Henninger; The effect on the birds in the opening of the park and the building of the reservoirs in the vicinity of Youngstown, Ohio, by Geo. L. Fordyce; A six weeks' stay in the Big Cypress Swamp of Florida, by F. M. Phelps; Notes on the nesting of the Herring Gull,

the Common Tern and the Red-breasted Merganser, by Dr. R. M. Strong (illustrated); The Ottawa River in Canada as a migration route and bird boundary, by C. W. G. Eifrig.

Before adjournment a short business meeting was held in which the revised constitution was read by Dr. Strong for the committee. Resolved, to adopt this and recommend it to the club for ratification.

EVENING SESSION.

This, as well as the afternoon meeting, was open to the public. Two illustrated lectures were given, the first by Prof. Lynds Jones on the winter habits of birds; the second, by Mr. G. A. Abbott, on the birds of the Calumet Region near Chicago.

C. W. G. EIFRIG, Secretary.

Note: The new secretary's address is as follows: Mr. O. M. Schantz, 5215 W. 24th St., Cicero, Ill.; the treasurer's: Mr. P. B. Coffin, 3232 Groveland Ave., Chicago, Ill.

Field Notes

Unusual Central Ohio Occurrences.

Professor J. S. Hine, of the Ohio State University, sends a note to the effect that a Black-crowned Night Heron (Nycticorax naevius) in the female plumage of the year, was taken near Columbus on December 18, 1913.

Mr. Thos. M. Earl, of Columbus, reports the receipt of a Golden Eagle (Aquila chrysaetos) sent to him for mounting from Coshocton county, in November, 1913.

Queer Practice of Wood Thrushes.

If more evidence is needed to substantiate the statement that a wood thrush frequently attaches a large piece of paper or cloth to its nest and lets it hang in conspicuous display, as if to mark the location of the nest, I will say that a piece of white tissue paper, several inches wide and perhaps half a yard long, hung from the nest of a wood thrush at Chautauqua last summer.

The nest was about eight feet high, in a thicket, and not to exceed a rod from the public street.

Birds are so well treated at Chautauqua that they are not very wild, and this bird seemed undisturbed by those who frequently stopped with inquisitive eyes as they passed by on the street.

There were several of these birds on the grounds, and their singing was so much in evidence that boys took it up and could often be heard whistling an imitation.

L. B. CUSHMAN.

North East, Pa., Dec. 30, 1913.

Sandpiper Notes.

The fall migration of 1913 proved to be rather unusual in regard to the sandpiper movements. Many species lingered later than usual in this locality and several new species were noted. Immense mixed flocks of shore birds fed on the mud flats around the bayous from Aug. 20 to Sept. 12. In these flocks the usual Pectoral, Semipalmated, Least, and Solitary Sandpipers and Lesser Yellowlegs were abundant. In addition Baird's Sandpipers (*Pisobia bairdi*) were present in considerable numbers from Aug. 22-27, and several specimens were taken. One Greater Yellowlegs (*Totanus melanolcucus*) was noted Oct. 6. From the 12th of September the numbers decreased rapidly, although a few individuals remained much later. The last records for the more common species are as follows: Pectoral Sandpiper (*Pisobia maculata*), Nov. 12; White-rumped Sandpiper (*Pisobia fuscicollis*), Nov. 7; Least Sandpiper (*Pisobia minutilla*), Oct. 12; Semipalmated Sandpiper (*Ereunetes pusillus*), Oct. 12; Yellow-legs (*Totanus flavipes*), Nov. 1; Solitary Sandpiper (*Helodromus solitarius solitarius*), Oct. 5; and Spotted Sandpiper (*Actitis macularia*), Oct. 8.

On the 6th of October, after the bulk of the shore birds had departed, a flock of four Red-backed Sandpipers (*Pelidna alpina sakhalina*) were noted feeding on the deserted mud flats and one was taken. The birds were tame and unsuspicious and allowed a close approach. On the 10th the ponds were visited again and a flock of about sixty found in the same place. Four were taken at this time. All authorities to which I have access state that this species is uncommon in the interior in the fall and it was a surprise to me to find them so numerous at this time. This is the first time that I have noted this form in the fall. A few lingered until the 25th of October, when the last one was seen.

IRA N. GABRIELSON, Marshalltown, Iowa.

"The Guide to Nature."

Many magazines, hundreds of schools and thousands of teachers and parents have tried to instruct children in a knowledge of nature. Yet the really natural child takes to nature for enjoyment like a duck to water.

Why urge the duck, why compel it to go into the water? When we destroy spontaneity and liberty, we prevent enjoyment and all consequent benefit. "We love the things that love us."

It is, however, not nature nor even natural science as a matter of instruction, as the adult understands it, that the child wants, but the fun of seeing things. Where is the boy or girl that is not pleased by the

sight of an elephant or a grasshopper? But when the mammal or that insect must be studied as so much nature or natural science, then is diminished the satisfaction of the watching, and when the watching is made a matter of study, of literature or of science, it becomes still less pleasing unless the observer is naturally studious. Compulsion always removes the zest and blunts the edge. We do best the things that we best like to do. This point of view has been strongly emphasized in Edward F. Bigelow's experience during his fourteen years' editorship of the department of "Nature and Science" of "St. Nicholas," his correspondence with boys and girls having probably been larger than that of any other editor. He has severed his connection with the "St. Nicholas" magazine and will establish in "The Guide to Nature" a department entitled "The Fun of Seeing Things."

Dr. Bigelow is an amateur naturalist. He revels in nature because he likes nature. He believes that young folks make the best companions when they are free from restrictions imposed by parents or teachers. He enjoys their unrestrained spontaneity. He enjoys their letters when the letters have not been revised and made so correct that they are deprived of all originality and heart. He wants young people as they are, not as some one thinks they should be, as he wants nature as she is, unchanged by man's meddling. The tangled thicket is more beautiful and instructive than the formally trimmed hedge. The wild grass is far more beautiful than the closely shaven lawn; a laughing brook in a secluded ravine is far more picturesque than a ditch with concrete banks.

He will conduct the new department, "The Fun of Seeing Things," as he would lead a party of young folks on a ramble. There will be more spontaneity than restraint, more originality than formally trimmed rhetoric.

Boys and girls that wish to share in this real fun may address Dr. Bigelow at Arcadia, Sound Beach, Conn.

"The Guide to Nature" pays for contributions only in the satisfaction that comes to every contributor in having his best work well published for the benefit of other workers. There can be no better remuneration. Therefore your best work in this great "labor of love" is solicited.

You are invited to share in the liberal pay received by the editor and the members of the family who assist him, and that is the joy of working faithfully in a cause than which there is none better on earth. This is the pay that the editor has. Your observations described in a plain and simple way, will help the magazine and encourage its readers.

Every cent of income from "The Guide to Nature" and from The Agassiz Association is placed on the "Received" side of the cash book. On the "Paid" side are only actual expenses—paper, printing, engraving, mailing, etc.

Publications Reviewed

Current Items of Interest, prepared by Henry Oldys, under the direction of the Audubon Society of the District of Columbia, January 20, 1914, is one of the quarterly series which contains many items of interest particularly relating to the protection of birds against plumage traffic. We are pleased to note from it that the enactment of the Tariff Plumage Measure is bearing fruit in Europe. The present outlook for any co-operation from France and Italy, and probably Spain, is dark. But continual agitation may finally result in the world-wide suppression of traffic in plumages for purposes of personal adornment. L. J.

There has come into our hands a "Bird Study Note Book," prepared by Clara Cozard Keezel, and for sale by her at Garnett, Kansas, at 27c the single copy, discount for quantities. It is designed for Intermediate and Grammar grades. It is 6¼ by 8¼ inches, and ruled to meet the needs which are suggested in the preface and on the last page. As a skeleton for observation and for making records it should prove of value. It seems to the writer to be better to the Intermediate than to the Grammar grades. Pupils of the Grammar grades are likely to want to keep records more elaborately than this little book makes possible. For them some loose sheet system would likely prove effective. L. J.

"Descriptions of Ten New African Birds of the Genera Pogonocichla, Cossypha, Bradypterus, Sylvietta, Melaniparus, and Zosterops." By Edgar A. Mearns, Associate in Zoölogy, U. S. National Museum. Smithsonian Miscellaneous Collections, Volume 61, Number 20. (Publication 2251.) November 29, 1913. "Four of the forms herein described are from the collection made by the Childs Frick African Expedition, 1911-1912; three are from the collection made by the Paul J. Rainey Expedition 1911-1912; one is from the Smithsonian African Expedition, 1909-1910 collection, made under the direction of Col. Theodore Roosevelt; and two were collected by Dr. W. L. Abbott in 1888." The new forms here described are all sub-species. L. J.

"Nature Study Review," the official organ of the American Nature Study Society. The January number, 1914, contains a report, under the caption "Some Students' Work," of two sets of observations by Normal Students, in which several birds are made the major objects of study. Both of these reports show the need of some editing. Nature study ought to have as one of its requirements accuracy, as far as it is possible to secure it. Here we find the names of the birds, some of them, inexcusably inaccurately printed, because it would be easy to have them right. In most cases the "Identification Characters" do not identify at all. If these are two fair samples of Normal School Nature

Study work there is clearly room for improvement. It is stated that "They are suggestive at least of the sort of work that is actually being done in preparing teachers to do nature work." Too bad! L. J.

"Descriptions of Eight New African Bulbuls." By Edgar A. Mearns, Smithsonian Miscellaneous Collections, Volume 61, Number 25, February 16, 1914. (Publication 2260.) "Four of the forms of African birds here described are from the collection made by the Childs Frick African Expedition, 1911-1912; three are from the Smithsonian African Expedition, 1909-1910 collection, made under the direction of Col. Theodore Roosevelt; and one from the Paul J. Rainey Expedition, 1911-1912." There are seven sub-species and one species—Andropadus fricki, Endoto Bulbul. L. J.

"Five Important Wild Duck Foods." By W. L. McAtee, Assistant Biologist. Bulletin No. 58, U. S. Department of Agriculture. February 7, 1914. These foods are the Delta Duck Potato (Sagittaria platyphylla), which is distributed over the lower Mississippi valley; wapato (Sagittaria latifolia and arifolia), distributed over the most of the United States and lower Canada; chufa (Cyperus esculentus), distributed over the United States except the north-west plains and the mountain regions of the west, as well as south into South America; wild millet (Echinochloa crus-galli), in widely separated regions of the United States; banana water lily (Nymphaea mexicana), at Lake Surprise, Texas, and all along the gulf coast, but capable of propagation over the whole United States. L. J.

The Ornithological Magazines.

The "Auk," January, 1914. Volume XXXI, No. 1. The two articles of particular interest in this full number are the first paper by Dr. R. M. Strong, of the University of Chicago, "On the habits and behavior of the Herring Gull, Larus argentatus," with plates III-X; and "Notes on the Ornithology of Clay and Palo Alto counties, Iowa," by A. D. Tinker, with plates XI-XII. In addition to other articles of less pretension and the usual large complement of Field Notes and reviews of literature, this number contains an account of the thirty-first stated meeting of the American Ornithologists' Union, which was held in November, 1913, in New York City, at the American Museum of Natural History. L. J.

"Bird-Lore." January-February, 1914, Volume XVI, No. 1. The colored frontispiece of the Redpolls and Purple Finches, and the Audubon colored plate of the Wood Thrush are prominent features. The Christmas Census covers twenty-four pages of brevier type, and even then we are told that a considerable number of the lists submitted were excluded for one reason or another. The widespread interest in the study of birds

could not be better illustrated than by this mid-winter census taking. It covers the whole country except along the Mexican border and for a short distance northward, where just now one might be excused from ranging alone over the plains! The varied articles and notes which appear regularly in "Bird-Lore" make it a valuable magazine. L. J.

"The Condor." January-February, 1914, Volume VI, Number 1. Some truly astonishing results are portrayed by William Leon Dawson in the opening article on "Direct approach as a method in bird photography." Among the other articles in this number may be mentioned as particularly worthy of mention that by Henry J. Rust on "Some notes on the nesting of the Sharp-shinned Hawk," with eight excellent half-tone plates. Also Joseph Grinnell's "Second list of the birds of the Berkeley Campus," where 97 species have been recorded, on the 530 acres. Bird classes would hardly need to make long trips to difficult fields with such a bird haven right at hand. L. J.

BOAT AND BLIND USED AT CRYSTAL LAKE

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OLD SERIES VOL. XXVI. NEW SERIES VOL. XXI.

TEN DAYS' BIRD STUDY IN A NEBRASKA SWAMP.

An Account of the Feeding Habits of the Bitterns and Swamp Blackbirds.

By Ira N. Gabrielson.

On the Nebraska side of the Missouri River, just across from Sioux City, Iowa, lies Crystal Lake, one of the typical ox-bow lakes formed by that stream. Between the north end of the lake and the river much of the territory is low and swampy and, in times of flood, covered with water. Just west of the town of South Sioux City there remains a large swamp almost entirely filled with wild rice, cat-tails and bulrushes. Open water is found in only one or two places. Along the eastern edge of the swamp is a sparse growth of willows and a little further back an occasional patch of wolf-berry and other bushes. On the south is a tract of timber, mostly of such trees as box elder, willow, and cottonwood, covering several acres. Scattered here and there throughout the tract are patches of tangled vines and shrubs of various species. In this region are found certain swamp loving birds in abundance.

In late June and early July of 1913, Mr. Howard Graham

and the writer spent ten days studying the birds of the swamp. We were unable to put in the entire time at the work but spent the greater part of each day there. A boat was secured, and an umbrella blind was erected on it. The boat proved to be leaky and we spent some time each day in bailing. Of course this interfered with the work to some extent. The worst trouble was with the wind, which blew so violently during each afternoon that we were unable to see anything from the blind. The heat at times became almost unbearable on account of the excess moisture in the air.

We started investigations on June 26 when we explored the eastern and southern sides of the swamp, but did not cover the northern or western parts on account of lack of time. On all sides of us we could hear cries of young birds and old. Black terns circled over our heads screaming and sailing directly at our faces only to turn aside just before reaching us. We found nests of several species and a number of those of the Yellow-headed Blackbird, the one we particularly wished to study. On the twenty-eighth we returned to the swamp, placed the blind on the boat and anchored it securely between the nests of a Bittern and a Yellow-headed Blackbird. From this time one of us was at the swamp most of the time until July 7 when we finally left.

We wished to study as many of the common nesting species as possible and succeeded in getting more or less data on the Bittern, Least Bittern, and Yellow-headed and Red-winged Blackbirds. The cramped position necessary in the blind compelled frequent relief, and during the periods of freedom from the blind we searched the swamp or timber for nests. During the time of the study we noted the following species of birds in the swamp or in the timber and bushes around the edge. The list could have been somewhat extended by a more careful search of the timber, as in past years a number of species have been noted breeding which were not noted during the study. Almost all of the species noted in the present report have been found nesting there at some time or other although not necessarily in the time of the work. Their presence is however good indication that they were nesting

again. Lack of time prevented a thorough search for nests. The following list of species was noted:

1. *Podilymbus podiceps.* Pied-billed Grebe. Abundant resident. Nests with eggs and young of all sizes were found during our stay. Often while we were in the blind a family of young grebes, accompanied by one of the parents, swam almost up to the boat. They seemed to be feeding on aquatic insects and vegetable matter.

2. *Hydrochelidon nigra surinamensis.* Black Tern. Present in considerable numbers. We found no nests, but thought from their actions they were breeding in the north end of the swamp.

3. *Querquedula discors.* Blue-winged Teal. One or two pairs nesting. We did not find any nests but saw one pair with young while we were in the blind. We could not count the number of the brood, as some of them were concealed by the weeds.

4. *Botaurus lentiginosus.* Bittern. One nest found and studied.

5. *Ixobrychus exilis.* Least Bittern. One pair nested and were watched for one day.

6. *Butorides virescens virescens.* Green Heron. One noted almost daily feeding on the small frogs, which abounded in great numbers. Did not find any nest, but have noted them in other years nesting in the willows along the shore.

7. *Rallus elegans.* King Rail. One individual noted several times.

8. *Porzana carolina.* Sora. Common. Noted every day, but did not find any nests.

9. *Fulica americana.* Coot. Abundant. A large number of nests found, and young of all ages noted. It was seldom during the day that the grating note of this species could not be heard or a number of them seen from the blind.

10. *Oxyechus vociferus.* Killdeer. Not common. One or two could usually be seen feeding along the east shore.

11. *Colinus virginianus virginianus.* Bob-white. Occasionally heard calling from the timber south of the swamp.

12. *Zenaidura macroura carolinensis.* Mourning Dove. Noted daily feeding along the shore and found nesting in the timber on July 1.

13. *Circus hudsonius.* Marsh Hawk. A nest found July 1 in a damp meadow southwest of the swamp. The four young were almost full grown and ran off through the grass as we approached.

14. *Otus asio asio.* Screech Owl. Heard calling from the timber.

15. *Ceryle alcyon.* Kingfisher. One occasionally flew across the swamp to the open water and fished there. The species did not nest about the swamp, but came to it from the Missouri River some distance north.

16. *Dryobates pubescens medianus.* Downy Woodpecker. Noted July 1 in the edge of the timber, where it was probably breeding.

17. *Melanerpes erythrocephalus.* Red-headed Woodpecker. Noted daily along the eastern side of the swamp.

18. *Colaptes auratus luteus.* Northern Flicker. Common.

19. *Tyrannus tyrannus.* Kingbird. One pair nested in the willows on the eastern shore.

20. *Myiochanes virens.* Wood Pewee. One noted in the timber July 1.

21. *Cyanocitta cristata cristata.* Blue Jay. Common in the timber.

22. *Corvus brachyrhynchos brachyrhynchos.* Crow. One or two pairs had evidently nested in the tall trees in the timber. A few came every day and hunted frogs along the shore.

23. *Molothrus ater ater.* Cowbird. Found feeding along the shore. Eggs found in the nests of the Yellow Warbler and Red-winged Blackbird.

24. *Xanthocephalus xanthocephalus.* Yellow-headed Blackbird. Abundant.

25. *Agelaius phoeniceus phoeniceus.* Red-winged Blackbird. A few pairs were nesting along the edge of the swamp.

26. *Sturnella neglecta.* Western Meadowlark. One individual noted almost daily on the eastern side.

27. *Icterus galbula.* Baltimore Oriole. Noted on several different days along the eastern shore in the willows.

28. *Quiscalus quiscula aeneus.* Bronzed Grackle. Appeared daily in varying numbers to feed along the shore. Did not nest in the immediate vicinity of the swamp, but nests commonly in the surrounding territory.

29. *Astragnalinus tristis tristis.* Goldfinch. Common.

30. *Chondestes grammacus grammacus.* Lark Sparrow. Two noted on June 26 as we approached the swamp.

31. *Spizella pusilla pusilla.* Field Sparrow. Breeding commonly in the wolfberry patches.

32. *Pipilo erythrophthalmus erythrophthalmus.* Towhee. One male seen June 26 on the edge of the timber.

33. *Zamelodia ludoviciana.* Rose-breasted Grosbeak. Noted daily about a large cottonwood on the east shore.

34. *Passerina cyanea.* Indigo Bunting. July 26 a nest containing three eggs was found in one of the wolfberry bushes.

35. *Spiza americana.* Dickcissel. Nested commonly in the bushes around the swamp.

36. *Hirundo erythrogastra.* Barn Swallow. Numbers of this species were constantly flying over the water. They nested in some abandoned buildings on the east side.

37. *Vireosylvia olivacea.* Red-eyed Vireo. Noted July 1 in the timber.

38. *Vireosylva gilva gilva.* Warbling vireo. A pair evidently nested in a boxelder in the edge of the timber, as they could be seen there every day.

39. *Dendroica aestiva aestiva.* Yellow Warbler. Nested commonly.

40. *Geothlypis trichas trichas.* Maryland Yellow-throat. Common.

41. *Dumetella carolinensis.* Catbird. Nests found in the timber July 1.

42. *Toxostoma rufum.* Brown Thrasher. Nests found in timber July 1.

43. *Troglodytes aedon parkmani.* Western House Wren. Common.

44. *Telmatodytes palustris iliacus.* Prairie Marsh Wren. Nested commonly.

45. *Penthestes atricapillus atricapillus.* Chickadee. Common in timber.

46. *Planesticus migratorius migratorius.* Robin. Noted commonly feeding along the shore.

The original object of this work was to obtain data on the food of the nestling Yellow-headed Blackbirds. The trip on June 26 revealed many nests in all stages, and the work was started on the twenty-eighth. On that date the blind was fixed on the boat and a search made for a nest with nestlings a day or two old. While engaged in this search we came upon one containing young of about four to six days old. This nest was located about eight or ten feet from a Bittern's nest containing five young. We decided to place the blind between the two and attempt a "double barreled" study. A Least Bittern's nest containing five eggs was marked for future study and the work was completed with a short study of the Red-winged Blackbird. The data obtained from the study of these four species will be presented in the following paragraphs.

YELLOW-HEADED BLACKBIRD. *(Xanthocephalus xanthocephalus).*

The Yellow-headed Blackbirds were by far the most abundant breeding form of the swamp. In the part examined there were probably several hundred nests; in the remaining half of the swamp the number is only a matter of conjecture. The nests which we examined were practically identical in location, being built in the wild rice growing some distance from the shore. They were woven in basket shape about three or more stems from eighteen inches to two and one-half feet above the water. The water in the region of the nests was about hip deep and they seemed to be confined to a belt

of this depth around the part of the swamp studied. This lay quite close to the south and east shores and was, as far as our investigations extended, the deepest part. A belt of water of this depth about one hundred yards wide lay in a half moon shape along these shores while the center was much shallower, being in many places not over eighteen inches deep.

The period of nidification was represented in the colony in nearly all of its stages from nests in which the clutch was not yet completed to almost fully grown fledglings. The cries of the young could be heard on all sides but it was difficult to distinguish one from his surroundings after he was in the weeds. One of the surprises of the study was that of learning the extremely early age at which the young left the nest. In the first brood studied, the young left before the end of the first day's observations. At the time they were in the pin feather stage of development and very few of the feathers had even begun to show beyond the sheath. That these nestlings did not leave any earlier on account of the blind was proved by the finding of a number of others in the same stage sitting on the broken down reeds scattered through the swamp. It seemed to us at first as if the obscurity of the reeds was much safer for the young than the nests, which were at times rather conspicuous, but later developments served to shake our faith in this explanation.

On the morning of June 29 at 4:00 A. M. the blind, erected between the Blackbird and Bittern nests, was entered by Mr. Howard Graham and the writer. Watch was kept on both nests and we soon had proof that the parents had not deserted them. The female Yellow-head fed one of the nestlings at 4:35, or about thirty minutes after the blind was entered. Constant observations were carried on until 4:30 P. M., at which time the wind blew the reeds about so violently that it was impossible to see either nest more than a fraction of the time. The action of the wind also made it difficult to see out of the opening in the blind at all times, so the work was closed for the day. This nest will be called nest A.

July 3 the blind was placed in position at another Yellow-head's nest containing three young. The work was begun at

7:30 A.M. on July 4 and continued until 4:30 P.M., when observations were again stopped by the wind. At the end of the day the blind was taken back to the Bittern's nest to continue the work there. This nest will be referred to as nest B.

In spite of the comparatively small amount of data secured in these two short studies, several facts were noted. In both cases the female did all the feeding, neither male approaching the nest. The males were apparently in little fear of the blind as they sat in the weeds only a few feet from it and uttered the harsh notes characteristic of the species. On several occasions the chosen perch was one of the stakes used to anchor the boat. This of course does not prove that the male never feeds but it is worthy of record that with scores of Yellow-heads of both sexes feeding and foraging about the blind we never saw a male carrying any insects away although many females were often found to do so. The males were seen hunting but always promptly devoured the insects caught. The total number of feedings recorded was thirty-eight for nest A and twenty-five for nest B. Table I will show the character of the food given to the two broods.

TABLE I.

Nestling Food in Nests A and B.

Food.	*Nest A.*	*Nest B.*	*Total.*
Unidentified	*15	1	16
Dragon fly	4	0	4
Larvae	4	0	4
Mayfly	27	19	46
Grasshoppers	0	4	4
Totals	50	24	74

The amount of data here presented is too small to permit of any conclusions concerning the food of the nestlings of the species and yet several important facts are revealed by the study.

*An attempt to continue the observations after the wind became bad explains the large number of unknowns. At nest B the blind was closed as soon as the wind made it impossible to see the nest.

It will be noted that mayflies constituted 62.16 per cent of the total and it is not improbable that most of the sixteen unidentified forms were also mayflies as the blowing about of the reeds prevented our determining the insect fed. This evidence tends to support strongly the statement made in a previous paper* that the food of the nestlings is largely determined by the accident of nest location.

The surroundings of these nests presented no variety. For a considerable distance about the nest, the conditions of shade, moisture, vegetation, and temperature were the same, and the insect species were of course limited to those forms favored by such conditions. As far as we could discover, mayflies and dragon flies were the only forms commonly found. These were clinging to the stems and leaves of the aquatic plants and the blackbirds secured them from these places. They seldom went far from the nest in their hunting and much of the time we could see them climbing about picking up insects until two or three were captured, when they flew to their nests with them.

In the sanitation of the nest the same care was found as in other species, the excreta never being allowed to touch the nest. It was taken directly from the young and carried away. It was rarely devoured, being disposed of in this manner only once in the two days. In nest B the three nestlings received about equal shares, being fed nine, eight, and seven times, respectively. The one which received the greatest number of feedings died in the afternoon and was carried away by the female on the last visit at 3:51 P. M. In nest A the young left the nest during the day and of course no comparison between their food is possible.

The method by which the young left the nest was interesting. At 5:38 A. M. one of the young clambered to the edge of the nest, seized one of the supporting reeds with each foot and climbed up them a short distance above the nest, advancing each foot alternately. After going about eighteen inches, the bending of the stalks under his weight brought

*Nest Life of the Catbird. *Dumetella carolinensis.* By Ira N. Gabrielson. Wilson Bul., Vol. XXV, Dec., 1913.

them in contact with others onto which he went. After traveling in the tops for a little way, he commenced to work toward the water, and reaching a broken reed rested a while. In a few moments he proceeded along this reed to another and was soon out of sight. The second nestling left at 7:00 A. M. in the same manner, and the third started several times but returned and was still sitting on the edge of the nest when the blind was closed for the day.

I had one glimpse of some of the dangers to which the young Yellow-heads are exposed. One of the young from a neighboring nest was sitting on a reed about two inches above the water when the jaws of a hungry pickerel rose from the water and the nestling disappeared. It was done so quickly that if I had not been looking directly at the bird it would never have attracted my attention. It is probable that others meet the same fate. Several times I noted fledglings that had just left the nest fall into the water. They managed to crawl out on a convenient reed but some may lose their lives in this way.

RED-WINGED BLACKBIRD. *(Agelaius phoeniceus phoeniceus).*

During the season of 1913 the Redwings were few in number, only four nests being found in the part of the swamp examined. As a usual thing the nests are placed in the flags or cat-tails, but all of these were in small willows from three to eight feet high, growing just in the edge of the water. No others of this usually abundant species were noted, and apparently the four pair were all that were in the southeastern half of the swamp. In all swamps where I have found both of the marsh blackbirds the same distribution has been noted; i. e., the Yellow-heads occupied the body of the swamp and the Red-wings the edges. As far as my experience goes the former always builds over deep water. The latter, however, is more variable, building along the edge or farther out in the swamp indiscriminately when the Yellow-head is absent, and occasionally nesting in fields quite remote from any water.

At noon on July 3, a small blind was erected at a Red-wing's nest which contained four young. The nest was discovered July 1 and held at that time three young and one egg. At 2:30 P. M. of the third, an attempt was made to begin the study but the birds had not yet become reconciled to the presence of the blind and would not approach at all. At 7:30 A. M. of the fourth, observations began and were continued until 4:30 P. M., when the high wind began to interfere to such an extent as to make further work unprofitable. As we approached, the male greeted us with his "Con-quaree" from the top of the blind, and he continued to use it during the day as a perch, either hopping about the top or swinging on one of the guy ropes. The female did all the feeding throughout the period of observation, the male contenting himself with watching the nest from one of his perches on the blind. At the approach of any person he left his perch and circled about his head, keeping it up until he had passed some distance beyond the nest.

During the day the young were fed fifty-one times. One of the four was dead at the time the work was started but remained in the nest until 3:00 P. M., when the female seized it and carried it away.

TABLE II.

FOOD OF NESTLING RED-WINGED BLACKBIRDS.

Food.	*Number.*
Unidentified	12
Wireworms	11
Cricket	1
Beetle	3
Mayfly	2
Fly	3
Green worms	4
Grasshopper	20
Moth	3
Spider	1
Tomato worms	4
Measuring worm	1
Total	76

The noteworthy thing about these data is the great variety of food used. Apparently the factor of nest location has again been the one which determined the nestling food. The conditions of shade, soil, vegetation, and moisture are varied. The nest was located at the water's edge, and at this point the land sloped rapidly up from the swamp and was covered by a heavy growth of willows and wolfberry bushes. There were at least four readily distinguishable zones in which the conditions mentioned varied: first, the water surface, filled with flags, arrowhead lilies, and, further out, cat-tails and wild rice, furnished mayflies, dragon flies, with an occasional grasshopper; second, the shore line, a zone of from three to five feet in width covered with decaying vegetation and bits of sticks, contained principally beetles and crickets; third, a narrow strip of grass covered territory lying between the shore and the bushes; and fourth, the bushes. The last two zones contained great numbers of insects of various species with grasshoppers the most numerous. These two furnished the greater part of the insects fed and seemed to be the favorite hunting ground of the female. The result of these varying conditions is the use of a variety of species as food instead of practically only two or three as the Yellow-heads did. The Red-wings foraged within a comparatively small area about the nest. The female never became quite reconciled to the presence of the blind and always came to the nest in a quick nervous way and, after inspecting it, fed hurriedly. The young did not raise the posterior end of the body in voiding the excreta and the parent was compelled to probe in the nest for it. Always on leaving the nest the female uttered a call much like that of the cowbird and one that I never before had heard a Red-wing use.

American Bittern *(Botaurus lintiginosus)*.

As far as we could discover there was only this one pair nesting in the swamp. The nest, which was discovered on June 28, contained five young several days old. The nest was built in water about three feet deep in a heavy growth of rushes. It was simply a floating platform of reeds with

no attempt to make a nest depression in the top. It was loosely woven about several upright stems which served to anchor it in place. Leading away from the nest were two distinct paths which ended from twenty to thirty feet away. The parent never flew directly to the nest but dropped into the end of one of these paths and came stalking cautiously to it. In leaving she always followed the other path and took wing from the end of it. The paths were marked by a broken and trampled line of vegetation and ended in a small platform. Our boat was placed directly across the path for leaving, and we had an opportunity to watch the building of a new one. On the first visit noted she walked off through the wild rice to the east of the nest, grasping the upright stalks with her feet and climbing from one to another. Her weight broke numbers of them and made the beginning of the trail. After going about twenty-five feet, she commenced to break other stalks down and lay them in a pile. Some were already in the water and she soon had a platform capable of sustaining her weight. The reeds were seized in the beak and broken with a quick sidewise jerk of the head. When the platform was finished, she stepped upon it and stood there for a time before she flew away.

During the watch on the twenty-ninth we saw her feed only once and then did not get to see the entire process as she entered quietly while we were watching the blackbirds and had nearly finished feeding when we noticed her. We were afraid the young would suffer for food on that day and undertook to feed them. If there was one conspicuous thing about the life in the swamp, it was the frogs—little fellows some of them with the remains of a tail still visible. The shore from three to five feet from the water's edge was simply carpeted with them and a person walking along the shore apparently sent almost the entire surface leaping into the water. It was an easy matter to secure a number with the aid of a stick, and we soon had between fifty and sixty in a couple of cans. When these had all disappeared down the five gaping throats in two feedings, about an hour apart, we thought we understood the necessity for such great numbers

of frogs. As Graham remarked, "It's a good thing there is such a fine crop of frogs and only this one Bittern family around. If the frogs were any less or the Bitterns any more plentiful, there would be a famine in the Bittern tribe."

Only the female came to the nest, although the male was often heard "pumping" in the surrounding reeds. We noted one fact in connection with the Bittern's hunting not noted in any other bird studied, and that was the distance from the nest of the regular hunting grounds. All other birds studied forage in the immediate vicinity of the nest while the Bittern went across the end of the swamp at least a half a mile from it. The nearest shore line and the place where we obtained the frogs was not more than a hundred yards away and the frogs fairly swarmed there. She was never noted feeding along this shore but flew across the swamp to a grass grown point covered with about two inches of water. One day I went around to this point and concealed myself in the willows to watch while Mr. Graham remained in the blind. The Bittern soon came flying from the direction of the nest and dropped into the grass a short distance from me and immediately became stationary. The frogs, which were as thick here as on the other shore, soon forgot her presence and began to swim about or climb over the bogs. When one came within reach, out shot the long neck and beak and seized him. He was hammered against a bog a few times and swallowed. After securing a number in this fashion she stepped up onto a bog and went to sleep. After a short rest she flew a little ways down the shore and went to hunting again. After her hunt and rest this time she flew heavily across the swamp toward the nest. Her disinclination to hunt on the nearer shore probably arose from the fact that it was frequented by boys much of the time and not from any aversion to hunting near the nest.

It was not until July 1 that we secured a good description of the complete feeding process. The following extract is from the note book used on that occasion: "At 9:55 A.M. I heard the flapping of heavy wings and the female settled down into the rushes about twenty feet from the nest. She

consumed ten minutes in covering that distance, advancing a few steps and then remaining motionless for a time. When only four or five feet away, she stopped for five minutes, remaining, as far as I could see, absolutely motionless, and then, apparently satisfied, stepped up to the nest. She progressed by grasping the upright stems of the aquatic plants and when she stopped to listen looked as though she were on stilts. As soon as she reached the nest, the young commenced jumping at her beak, continuing this until one succeeded in seizing it in his beak at right angles to the base. A series of indescribable contortions followed, the head of the female being thrown jerkily in all directions and the muscles of the neck working convulsively. Finally her head and neck were placed flat on the nest for several seconds and then slowly raised again. As it came up the food came slowly up the throat into the mouth. As the food passed along the beak, the open beak of the young bird followed its course along until it slid into its mouth and was quickly swallowed. The young one then released his hold and the parent stood with the muscles of the neck twitching and jerking. The remaining young kept jumping at the beak until one secured a hold on it, when the process was repeated. By 10:30 all five of the brood had been fed. Each one after receiving the food staggered across the nest and lay down with the head and neck flat on the weeds and remained in this position for some time before showing any signs of life again." After the feeding the parent walked away and built the platform described elsewhere. She rested here until 11:15 and then flew away. On the sixth of July the young had become well feathered out although the natal down was still conspicuous on the head and neck. It was impossible to do any more work with them after this time as they began going out in the swamp to meet the parent, receiving the food there and returning to the nest. On July 1 the nest was under observation from 8:00 A.M. until 4:30 P.M. and the young were fed three times during that period, making from five to eight feedings the probable number for the day. Each time all five young were given a mass of food about the size of an

English walnut. In its quick passage from the parent to the young it was not possible to determine much as to its nature except to discern an occasional frog's leg. When last noted they were still being fed by regurgitation. It would be interesting to know how long this method of feeding is continued but we were unable to follow the fortunes of this Bittern family any further.

An observation made in 1910 may be of some interest in this connection. While a piece of wild hay was being cut, a nest of this species was uncovered and four of the five young were killed before the team could be stopped. A small patch of hay was left standing about the nest and the young one placed in it. At this time he was fully feathered out but was unable to fly. The next day the parent was noted flying into the patch of hay without anything in her beak. After she left I walked over and approached the young one, who immediately started to run. Seeing that he could not escape he stopped and disgorged the contents of his stomach. An examination showed one garter snake about sixteen inches long, a meadow mouse and three crayfish, all partially digested. This observation seemed to prove that at this age the young were still being fed by regurgitation.

During the time the nest was under observation, a number of interesting facts were noted in connection with behavior. One thing which struck us very forcibly was the apparent readiness of the parent to abandon the young at the approach of any person. She made no attempt to defend them but stalked stealthily away at any slight noise or movement. This made it necessary to sit absolutely motionless in the boat while she was at the nest and as she frequently remained for an hour or more it became decidedly uncomfortable. Any slight movement would cause the boat to tip and at this she was gone in a flash. Several times she approached to within a few feet of the nest and was frightened away by some slight motion of the blind. On these occasions she generally remained away for from three to four hours. This is not always true of the Bitterns as I have had them remain on the nest and almost allow me to touch them and have had

them try to frighten me away by ruffling up the feathers and making a funny hissing sound.

The actions of the young were very interesting and were in direct contrast in many ways to all other young birds with which we were familiar. No sound was ever made on the approach of the parent beyond a slight hissing, barely audible in the blind four feet away. This was very different from the young Yellow-headed Blackbirds on all sides of them, who could be heard almost constantly begging for food. During the absence of the parents, however prolonged, no outcry was ever made by the young Bitterns unless one of us went out of the blind and tried to touch one of them. When we did this they backed away from us, uttering a curious hissing sound and pecking viciously at our fingers. It was interesting to note the change in their actions after the parent left the nest. For perhaps ten minutes they remained in the position assumed after feeding, as described above. At the end of that time they commenced to raise their heads and look around. For the next hour they sat contentedly on the shaded side of the nest, occasionally dipping the tip of the beak into the water but never drinking anything. In the next half hour they began to grow uneasy and to keep watch for the parent. Every blackbird that flew above the nest caused each head to rise to its full height and silently watch his flight across their horizon. At times they seized each others' beaks in the same manner as the parent's was held. At other times they seized the reed stems crosswise and pulled vigorously on them, sometimes working the mandibles as if chewing. This continued until the return of the parent, when all would assemble on one side of the nest and watch her approach through the reeds. No sanitary measures were noted, and the nest became a rather unpleasant smelling place before our work was finished.

LEAST BITTERN. *(Ixobrychus exilis.)*

The Least Bittern nest, which was located on June 26, contained five eggs. On July 4 two eggs had hatched and on the sixth all but one. The blind was put in place on the

evening of the sixth, and we watched this nest most of the day on the seventh. In marked contrast to the timidity of the Bittern, these birds were devoid of fear. While we hauled the boat and blind in place and drove stakes to anchor it, the female sat quietly on the nest. And when we removed the blind, the male gave an exhibition of equal fearlessness by sitting on the nest through it all and pecking angrily at our fingers when we tried to touch him. On July 7 at 8:00 A. M. I entered the blind. The female was on the nest and did not leave until I stepped into the boat, causing the blind to tip suddenly toward her. At this she stepped off from the nest and walked some five or six steps. After remaining there watching the blind for about thirty minutes she returned. The nest was a small platform built in the rushes and back of it was a mass of broken down vegetation which formed a platform several feet square. This the Bitterns used as a landing place. The fifth egg had hatched and the shell was gone when I entered the blind, although the nestling was not yet dry. One or the other of the parents kept the nest covered throughout the day and both assumed the same position. They sat on the nest with the wings spread in such a manner as to give the body a curious flattened appearance while the head and neck were extended to their full length with the beak pointing straight in the air. Occasionally the head was lowered for an instant to examine the young but almost immediately was raised again. Every bird that flew by was watched and every movement in the surrounding vegetation seemed to be noted by the bird on the nest. This position had the advantage of elevating the eyes some distance above the nest and gave the bird a better view of what was going on around.

I was curious to see how these newly hatched young would get their food; to see if they were fed as the young American Bitterns had been. At 10:50 the bright colored little male alighted on the platform behind the nest and stood there watching the female who was on the nest. From time to time he allowed the beak to hang open and shook his head in a comical way. After he had been doing this for ten

minutes, the female stepped from the nest and flew away. The male took her place and stood, still shaking his head. All of the brood, *including the one just hatched,* were jumping at his beak. Finally one of them succeeded in securing a hold on it and pulled his head down toward the nest. His beak was seized at right angles by that of the young as in the case of the American Bittern. Instead of the violent contortions which preceded the act of regurgitation in the other species, a few convulsive jerks of the throat and neck muscles brought the food into the mouth, from which it passed into that of the young in the same manner as before. The food instead of being in a compact mass was more of a liquid containing pieces of small frogs and occasionally whole ones. These nestlings had not yet become proficient in their strange manner of feeding and more or less of the food material fell into the nest. When this happened, the young which were not receiving food at the time seized it and swallowed it. When two secured a hold on the same frog, an exciting tug of war followed until one or the other was victorious. All five young were fed at each visit, and it seemed to be as instinctive for them to jump at the beak of the parent as it is for other young birds to raise the opened beak.

During the day the male and female alternated in the care of the nest but the brooding periods of the latter were much the longer. She seldom remained away any length of time. On the other hand the male did all the feeding, four times, during the day. The female evidently hunted only for her own food during her absences from the nest while the male foraged for both the nestlings and himself. Both parents did their hunting on an extensive mud flat about two hundred yards from the nest.

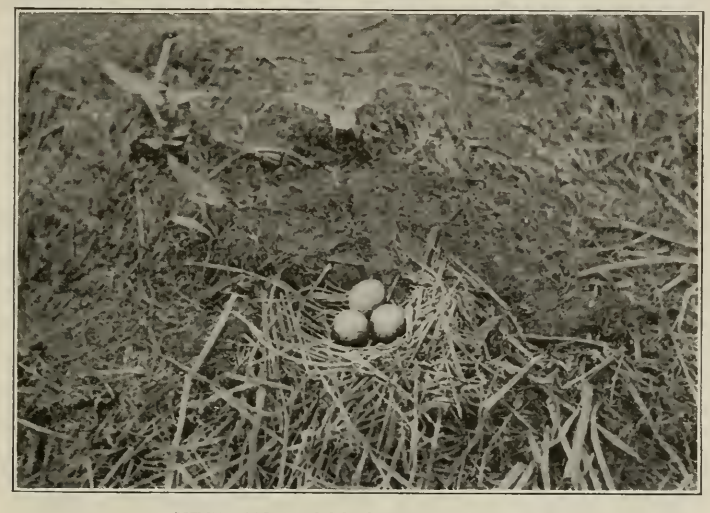
No attempt was made at sanitation during our brief study, the excreta being allowed to drop on the nest or fall into the water beneath. The unconcern of the parents at our presence made them the most interesting of all the birds studied and it was with regret that we removed the blind and closed the work.

Marshalltown, Iowa.

BREEDING BIRDS OF A CLAY COUNTY, IOWA, FARM.

By Ira N. Gabrielson.

The title of this paper is not literally accurate, as the territory included parts of several farms as well as the home place. The notes on which the report is based were made during the summer months in the years 1907-1911 inclusive. The land of the farm and surrounding territory is typical prairie land lying in the eastern edge of the county. It is



NEST AND EGGS OF BLACK TERN

gently rolling and is characterized by innumerable "kettle holes," cat-tail swamps, ponds, and small lakes. Much of it is still unbroken and retains a flora of native grasses and flowers. The only timber in the territory covered by this report consists of the artificial groves—mostly willow, maple, box elder, and cottonwood—a small apple orchard on the home place, and a fringe of low bushy willows along one of the ponds. The remainder of the land is in native grasses, used as hay, or pasture, or under cultivation, usually in corn, oats,

or clover. There were, during the years of study, two ponds of thirty and forty acres respectively, and fifteen small swamps, ranging from one or two square rods to three acres in size, scattered over the region included. This and much of the surrounding land has been drained since 1911, and it is only a question of a short time until the remainder of the swamps and ponds will disappear. A visit during August, 1913, was interesting because of the glimpse obtained of the

NEST AND EGGS OF BITTERN

manner in which bird life had been affected by the change. Only five species of birds, Tree Swallow, Barn Swallow, Bartramian Sandpiper, Killdeer, and Meadowlark, were noted in an entire day in the field where in 1910 or 1911 from forty to fifty species could be noted any August day. Of these five species, the last four were resident and of these only two, the Meadowlark and Barn Swallow, were as numerous as before.

While the list may appear as incomplete, the draining of the country makes it impossible to obtain any further data under the old conditions, and it is deemed advisable to publish it at this time as an approximate list of the nesting species of the region. It might be said that the only species noted in

NEST AND EGGS OF LEAST BITTERN

the territory during the breeding season which did not nest there was the Black-crowned Night Heron. These birds visited the ponds daily but nested in the timber along the Little Sioux River some ten miles away.

The species listed here are sharply divided into two distinct groups; viz., those native to the prairie and swamp, and

those which have followed man into the country and nest in the artificial groves and about the buildings.

In the first class may be placed the following twenty-eight species which in all probability were in the country in greater or less numbers previous to its settlement: Pied-billed Grebe, Black Tern, Mallard, Blue-winged Teal, Bittern, Least Bit-

NEST AND EGGS OF KING RAIL

tern, King Rail, Sora Rail, Florida Gallinule, Coot, Wilson's Phalarope, Bartramian Sandpiper, Killdeer, Prairie Chicken, Marsh Hawk, Short-eared Owl, Prairie-horned Lark, Bobolink, Cowbird, Yellow-headed Blackbird, Red-winged Blackbird, Western Meadowlark, Grasshopper Sparrow, Lark Sparrow, Dickcissel, Maryland Yellow-throat, Short-billed Marsh Wren, and Prairie Marsh Wren.

In the second class are included the following twenty-one species which nest only in the artificial groves and about the buildings: Bob-white, Mourning Dove, Screech Owl, Downy Woodpecker, Red-headed Woodpecker, Flicker, Chimney Swift, Phoebe, Blue Jay, Crow, Baltimore Oriole, Bronzed

NEST AND EGGS OF FLORIDA GALLINULE

Grackle, Goldfinch, Purple Martin, Cliff Swallow, Barn Swallow, Yellow Warbler, Catbird, Brown Thrasher, Western House Wren, and Robin.

Of the fifty on the list only the Kingbird is doubtful. This species nests usually in the groves and belongs probably to the second class, but I have found them nesting in the willow

growth along the pond, and they may have nested in situations of that kind before the groves were present. However that may be, it was, at the time these notes were made, one of the most characteristic and abundant birds of the region.

NEST AND EGGS OF UPLAND PLOVER

After the young left the nest, they were to be found along the fences and telephone lines and during August were among the most conspicuous bird forms.

1. *Podilymbus podiceps.* Pied-billed Grebe. Abundant summer resident and breeder. One or two nests found every year in each little swamp.
2. *Hydrochelidon nigra surinamensis.* Black Tern. Breeds com-

monly in small colonies in the swamps. Nest generally built on a deserted muskrat house. In the spring and fall they follow the plows in great flocks, picking up the insects turned up. Picture was taken June 18, 1910. The nest was, as usual, on an old muskrat house.

3. *Anas platyrhynchos.* Mallard. A common migrant, but rather rare breeder. On July 24, 1910, I saw a female and nine partly grown young in one of the small ponds.

4. *Querquedula discors.* Blue-winged Teal. Common breeder. Nests generally found in the long grass bordering the swamps.

5. *Botaurus lentiginosus.* Bittern. One nest containing five eggs was discovered in a hay field on the ground on June 15, 1909. June 13,

NEST AND EGGS OF KILLDEER

1910, I found another nest containing four young within a few feet of the place where the 1909 nest was located. Picture taken June 15, 1909.

6. *Ixobrychus exilis.* Least Bittern. Common about the swamps every year, but only one nest was ever discovered. That was found June 10, 1909. It contained five eggs and was a platform built in the reeds over the water.

7. *Rallus elegans.* King Rail. Common summer resident and breeder. Nests usually built in the thick grass around the small swamps, though they were occasionally placed in the hay fields some distance from the water. A photo of a nest of this species containing 14 eggs was taken June 24, 1907.

8. *Porzana carolina.* Sora Rail. This species was always present in considerable numbers during June and July. While I never succeeded in finding a nest, there is no question of their nesting here, as I noted several times young birds scarcely able to fly.

9. *Gallinula galeata.* Florida Gallinule. Three nests of this species were found: two in 1909 on June 10, and one on June 18, 1910. They seemed to be quite common throughout the region.

10. *Fulica americana.* Coot. Abundant breeder in the ponds and cat-tail swamps.

11. *Steganopus tricolor.* Wilson's Phalarope. I have no definite breeding record for this species, but a pair remained all through June

NEST AND EGGS OF KINGBIRD

and July, 1910. A certain small muddy point projecting out in one of the small ponds seemed to be their particular haunt. At any approach to this place both male and female would appear and circle about the intruder. I thought they had a nest at that point, but although I searched carefully I never succeeded in finding it.

12. *Bartramia longicauda.* Bartramian Sandpiper. Common summer resident. One nest containing four eggs was discovered in a pasture in a bunch of grass. The nest was well concealed and was found with difficulty after it had been visited twice. The photo of this nest was taken June 4, 1909.

13. *Oxeychus vociferus.* Killdeer. Common breeder. Nests generally in the cornfields. The eggs are laid on the ground or on a few pieces

of broken corn husks, with little attempt at nest building. Picture taken June 15, 1910.

14. *Colinus virginianus virginianus.* Bob-white. During 1909 and 1910 a pair of these birds nested in the corner of the orchard.

15. *Tympanchus americanus americanus.* Prairie Chicken. One or more pairs of this species nested every year. Nest built generally along the fences in the tall grass and weeds.

16. *Zenaidura macroura carolinensis.* Mourning Dove. Nests in the groves.

17. *Circus hudsonius.* Marsh Hawk. Nested in the damp wild hay fields. One or two nests discovered and destroyed every year by the farmers.

NEST AND EGGS OF BOBOLINK

18. *Asio flammeus.* Short-eared Owl. Nested in much the same localities as the marsh hawk. The young were very tame and unsuspicious and would allow a close approach as they sat on the hay stacks.

19. *Otus asio asio.* Screech Owl. Nested every year in one of the groves.

20. *Dryobates pubescens medianus.* Downy Woodpecker. Nested in the same grove with the screech owl.

21. *Melanerpes erthrocephalus.* Red-headed Woodpecker. Common summer resident and breeder in the groves.

22. *Colaptes auratus luteus.* Northern Flicker. Not as common as the preceding. One nest found July 3, 1909, containing six eggs.

23. *Chaetura pelagica.* Chimney Swift. Two pairs nested in the chimney to the farm house every year.

24. *Tyrannus tyrannus.* Kingbird. Common breeder. After the young leave the nest they spend their time on the fences and telephone wires. At this season they appear to be the most conspicuous birds of the region. Nests in groves, in the willows along the swamps, on fence posts, and even in machinery left in the fields. June 26, 1910, a nest was found in a large maple tree along the road.

25. *Sayornis phoebe.* Phoebe. One pair nested in 1910 and 1911 under a small wooden culvert in the road in front of the farm.

RED-WINGED BLACKBIRD'S NEST
Containing Two Cowbird's Eggs

26. *Octocoris alpestris praticola.* Prairie Horned Lark. Nests abundantly. Two broods are generally raised. The first nests are built in pastures and the second ones almost invariably in the corn fields at the base of a hill of corn. I have found as many as ten in a thirty-acre field.

27. *Cyanocitta cristata cristata.* Blue Jay. A common bird in the neighboring towns, but not often found in the groves. One or two nests have been found in the region covered by the paper. One nest built in an old apple tree and one in a maple grove.

28. *Corvus brachyrhynchos brachyrhynchos.* Crow. Breeds quite commonly in the larger groves.

29. *Dolichonyx oryzivorus.* Bobolink. One of the most common breeders. Nests commonly in the hay fields. Nests are well concealed in the long grass. One found June 12, 1910, contained four bobolink eggs and two cowbird eggs.

30. *Molothrus ater ater.* Cowbird. Altogether too common. The eggs are most frequently placed in the nests of redwings and bobolinks, although they are sometimes placed in the robin, yellow warbler, and meadowlark nests.

NEST AND EGGS OF GRASSHOPPER SPARROW

31. *Xanthocephalus xanthocephalus.* Yellow-headed Blackbird. Breeds in colonies in the swamps over the water. The nests are basket-like affairs woven in the reeds about two feet from the water. In 1909 many nests were flooded and the young drowned by high water.

32. *Agelaius phoeniceus phoeniceus.* Red-winged Blackbird. Probably the most abundant breeding bird. Generally builds in the cat-tails and flags in the edge of the swamps, but sometimes in the meadows in bunch grass. On June 18, 1910, I found twenty-three nests in a small swamp not over two rods square. The number of nests in the territory

covered by this report ran into the hundreds if not thousands. In 1909 many nests were destroyed by flooding. A nest discovered June 12, 1910, contained three redwing eggs and two cowbirds' eggs.

33. *Sturnella neglecta.* Western Meadowlark. Common breeder. Next to the bobolink the most numerous of the ground-nesting birds.

34. *Icterus galbula.* Baltimore Oriole. One or more pairs nested in the groves each year. I never succeeded in finding an occupied nest, but noted them each year after the fall of the leaves. I also saw the young after leaving the nest.

35. *Quiscalus quiscula aeneus.* Bronzed Grackle. Nests in groves.

36. *Astragalinus tristis tristis.* Goldfinch. One pair nested every year in the orchard.

37. *Ammodramus savannarum australis.* Grasshopper Sparrow. July 14, 1910, I found the only nest of this species discovered in this region. The nest contained two eggs and was in a hay field. It was discovered in mowing, the old bird remaining on the nest until the mower had passed, and then flying off. The nest was abandoned, although every effort was made to leave it undisturbed.

38. *Chondestes grammacus grammacus.* Lark Sparrow. Nests on the dry hillsides.

39. *Spiza americana.* Dickcissel. Nests commonly along the fences and in weeds in the small grain fields.

40. *Progne subis subis.* Purple Martin. Common summer resident in the towns. Several pairs built about the farm building in 1910.

41. *Petrochelidon lunifrons lunifrons.* Cliff Swallow. In 1909 and 1910 a colony of these swallows built under the eaves of the home buildings. Each year there were about half a dozen nests containing eggs and several others in which eggs were not laid.

42. *Hirundo erythrogastra.* Barn Swallow. Common about the buildings. Nests found every year at all the farms of the region.

43. *Dendroica aestiva aestiva.* Yellow Warbler. Several pair built every year in the orchard and in bushes about the house.

44. *Geothlypis trichas trichas.* Maryland Yellowthroat. One pair built in the orchard in 1909. The nest containing three eggs was found June 12 at the foot of a small tree.

45. *Dumetella carolinensis.* Catbird. Builds occasionally in bushes about farm houses. The parents and young leave the groves as soon as the latter are able to fly.

46. *Taxostoma rufum.* Brown Thrasher. Found nesting in 1910 in an old brush pile in one of the groves.

47. *Troglodytes aedon parkamani.* Western House Wren. Common breeder about the farm houses.

48. *Cistothorus stellaris.* Short-billed Marsh Wren. Rather a rare resident and breeder. One nest found July 28, 1910, contained six eggs. The nest was built close to the ground in a damp marshy hay field.

49. *Telmatodytes palustris iliacus.* Prairie Marsh Wren. Nests commonly in the reeds growing in the ends of the larger ponds.

50. *Planesticus migratorius migratorius.* Robin. Common. Builds in the groves and about the houses.

NOTES ON THE SPOTTED SANDPIPER.

By Arthur F. Smith.

During the summer of 1913 the writer was privileged to be present at the session of the Iowa Lakeside Laboratory, on Lake Okoboji, Iowa. There are many opportunities here for the intensive study of the life and behavior of birds, and such work is encouraged by the Laboratory.

In the summer of 1913 two nests of the Spotted Sandpiper (*Actitis macularius*) were found, and at the suggestion of Dr. T. C. Stephens the writer followed their history somewhat carefully. Both of the nests were located similarly, viz., near the extremity of long, low sand spits projecting into the lake for a distance of two hundred yards or more. In each case the nest was about seventy-five feet from the point. The nests, which were located on Gull Point and the Sand Spit in Miller's Bay respectively, may now be considered separately.

The nest on Gull Point was found on Friday, June 27, at 5:30 P.M. At this time it contained four eggs. The ground at this point was sandy, covered by a sparse growth of foxtail grass and a few weeds. The neck of land here was not over thirty or forty feet in width, and was quite low. The nest was afforded very little concealment among the short, dry grass; but, nevertheless, the nest itself is so inconspicuous that it is seen with difficulty even at close range. It was noted that when the parent bird was on the nest her colors harmonized quite perfectly with the surrounding vegetation and ground. The eggs also presented little or no contrast with the environs of the nest.

Visits were made to this nest on June 29, July 1, 5, 7, 8, 10, and 13, and on each occasion one of the parents was

flushed from the nest. At each of these visits the bird, when flushed, flew to some distance; however, when the eggs began to hatch this distance became greatly shortened.

About 7:30 P. M. on the 14th of July the first egg was found to be hatching. The shell was roughly broken across the large end for a distance of about three-fourths of an inch, and from one end of this jagged opening there extended a clean crack pretty nearly to the small end of the egg.

Close examination now revealed that two other eggs were pipped. In both cases there was a little round hole just large enough to permit the protrusion of the tip of the chick's beak. In all three the beak of the chick kept at work crumbling away the edge of the shell and membrane.

The old bird was now very tame, and at no time was she more than a few yards away. She displayed great curiosity, or anxiety, slipping in and out between the grass, and eyed the intruder from one side and then the other.

I then withdrew to a point about twenty feet away in order to allow her to return to the nest. This she did immediately, but something must have frightened her again, for she jumped about four feet straight into the air. I now gradually approached the nest, repeatedly flushing the bird and waiting for her return; when I got within five feet of the nest the old bird left, only to return at once, calling and receiving answering chirps from the partly hatched young. Finally, I got within three feet of the nest; the old bird simply stood up on the piece of bark by the nest, looked interested, and returned to the nest.

The old bird covered the nest by spreading the wings slightly, and fluffing the breast feathers.

As I crept a little closer the old bird flushed, and I saw that the first young bird had emerged from the shell. At 8:30 P. M. I left. The nest contained at this time one chick, two pipped eggs, one entire, and one empty shell.

July 15. When I returned to the nest at 4:30 A. M. the old bird was on the nest, but flushed at my approach. The nest now contained four young birds and three empty shells. Evidently one shell had been disposed of, and probably the

night before. One of the chicks left the nest with vigorous chirps, and joined the mother near by. One other chick, though not yet dry, was endeavoring also to leave the nest.

As I lay within two and a half feet of the nest, the old bird came and pecked at an egg shell, and then sat down. Two of the chicks climbed onto the mother's back.

I was able to distinguish two calls of the adult birds. One might be called the *alarm note,* which gives warning to the young of danger; it is simply a repetition of a single note, thus: "Peet-peet-peet-peet," etc. The other might be called a song, for the parent sings it as she coddles the young. It runs thus: "Tr-tr-tr weet, tr-tr-tr weet, tweet, tweet, tweet, tr-tr-tr."

One of the first acts of the old bird was to pick up one of the half shells and carry it to the water's edge, where it was dropped. A little later she bit off some pieces from the small part of the shell and swallowed them. At 5:30 A.M. she carried off the second half shell and dropped it at the lake shore as before. At 6:00 A.M. she cleaned out the nest, eating a number of small bits of shell, some of which she obtained by scatching in the grass; the last large piece of shell was carried to the shore as before, but this time she held it under the water and shook it. The shell was then eaten, thus departing somewhat from the previous conduct.

At 6:10 A.M., when the old bird returned, two of the young were about twenty feet away in the grass. Up to this time a close watch had been kept as to the feeding of the young birds. The parent was not observed to bring any food to the nest. But now the two little chicks which had left the nest were observed to pick at the grass as if in the act of catching insects. And with continued observation I concluded they were feeding, all of which the old bird watched attentively. On one occasion a garter snake came to the vicinity of the nest, but was warded away from the direction of the young birds by the vigorous wing action of the parent.

On the 17th the place was again visited for the purpose of photographing the young. Two were found and photographed; the other two were seen to run off in the grass, but

were not caught. The old bird seemed to divide her attention between these two pairs of chicks.

Some summer cottagers living near by said they had been in the habit of feeding these sandpipers (what I do not know), and they stated that the chicks usually appeared in pairs. Just why the chicks should leave the nest in pairs

NEST AND EGGS OF SPOTTED SANDPIPER

I am not at present able to say, except that a suggestion is found in the study of the next nest.

The nest on the Sandspit in Miller's Bay was found on June 27, and contained four eggs. It was visited daily and on the evening of July 12 the four eggs were intact. At 1:30 P.M. on the 13th there were two chicks and two eggs. At 3:20 P.M. the third egg was pipped, with the chick's bill protruding. At this time the two chicks were running about in the grass. It was interesting to observe that at this early

age, only a few hours out of the shell, the young exhibited the peculiar habit of teetering the tail, which is characteristic of the adult, and which gains for them the common names, "Tip-up," and "Teeter-tail."

At 5:00 P. M. there was no change in the third egg, but the fourth was cracked at the large end. At 8:30 P. M. the third egg had not changed, but the fourth egg presented a small

NEST AND EGGS OF SPOTTED SANDPIPER

hole about three-eighths of an inch from the large end. At 9:30 P. M. there was no further change in either egg.

At 5:00 o'clock on the morning of the 14th the last two eggs had hatched, and there were three chicks in the nest, together with the two shells. These shells were complete except for a cap about five-eighths of an inch in diameter at the large end. The cap, which lay in the nest, was very cleanly cut from the rest of the shell.

At 9:00 A. M. the nest was empty.

At some time about the middle of July some members of the Laboratory brought in two of the chicks from Gull Point. They should have been returned to that place, but, instead, were liberated on the Sandspit. However, on July 24, five of the six young sandpipers which were now on the Sandspit were banded by Dr. Stephens and Dr. Lynds Jones. As a matter of interest and record the numbers of the bands may be here given as follows: 11522, 11523, 11524, 11525, 11526. The young birds were observed on the spit as late as July 29. It is hoped to continue the study of these birds during the summer of 1914.

The facts obtained in this study may be summarized as follows:

SUMMARY.

The incubation period would seem to be over seventeen days.

The old birds dispose of the egg shells partly by devouring.

Hatching seems to occur during the night.

The chicks leave the nest within five or six hours, but probably not much sooner unless disturbed.

It seems that the young birds are not fed by the parents at any time, but forage for themselves from the beginning.

THE RESIDENT BIRD LIFE OF THE BIG CYPRESS SWAMP REGION.

By F. M. PHELPS.

In the spring of 1913 I had the good fortune to be in Florida during the months of March and April and the early part of May. Of this time the latter half of March and nearly all of April were spent in the Big Cypress Swamp region of Lee County in the southwestern part of the State, and it is relative to its resident bird life that this paper has to deal, giving particular attention to the larger and more important species.

For a week before entering upon this trip I visited at Clearwater with my good friend, Oscar E. Baynard, going over details and arrangements. I must thank him largely for such measure of good fortune as came to me later, for he gave me the benefit of the knowledge he had gained of the country during the two previous winters, and also secured for me the services of guides whom he had employed.

I arrived at Fort Myers March 13th, where I met Mr. Rhett Green, now employed as warden by the National Association of Audubon Societies, who was to conduct me to the rookery under his charge. We started out just before noon of the 14th in a light, single buggy and drove the rest of the day through the open, sun-lit pine woods without particular incident, and camped that night in a temperature that made even the lightest covering a burden and stirred the mosquitoes to the highest pitches of fervor.

By sun-up we were on the way again. The country was now growing wilder. The dog started a Wild Turkey from a clump of saw palmetto beside the trail, a Sandhill Crane swung trumpeting across a near-by pond. Twice we stopped while I slipped on my climbing irons and ran up to nests of the Florida Red-shouldered Hawk, each time to find two eggs apparently advanced in incubation. The ground was becoming low and wet and cypress "heads" more and more frequent. Toward noon we came out upon the edge of a big open marsh stretching away four or five miles to the south, far across which we could see a solid background of great cypress trees. This was my first view of the Big Cypress Swamp, which beginning here runs almost unbroken for sixty or seventy miles to the south and to the eastward until it finally merges with the Everglades.

As we progressed slowly across the marsh, often hub deep in water, singly and by flocks water birds began rising on every hand; Ward Herons, Egrets, White and Wood Ibis, Yellow-crowned Night Herons, Little Blue and Louisiana Herons, and several species of Ducks, including three of the rare Florida Duck (*Anas fulvigula fulvigula*). On an open pond we also identified the Limpkin and Purple Gallinule.

Early in the afternoon we arrived at Mr. Green's camp beside one of the finest rookeries to be found in Florida, an imposing one even in these days of diminishing bird life. Here is no doubt the largest nesting colony of Wood Ibis in the State, probably not less than 5,000 pairs of birds. Perhaps 300 American Egrets were nesting here, and a little handful, not more than a dozen pairs, of the beautiful

WHITE IBIS AT NEST
Photo by O. E. Baynard

Roseate Spoonbill, which I saw here for the first time in life, a memory that still recurs to me. That evening as we stood watching the birds filing in from the feeding grounds and circling over the rookery, I caught a gleam of pink as one of the more distant birds turned in the rays of the setting sun, and leveling my glass I watched my first "Pink Curlew" circle slowly two or three times above the tree tops and then drop down to its nest.

Next morning as the first light of dawn tinged the eastern sky a pair of Sandhill Cranes began whooping on a little pond scarcely a quarter of a mile away, an old Turkey Gobbler struck up his mating call down the open glade that lay between us and the cypress swamp, the thousands of young Wood Ibis and other nestlings set up their insistent clamor for food, which did not hush nor diminish until the sun was high in the heavens, and then I realized that here

NEST AND EGGS OF WHITE IBIS
Photo by O. E. Baynard

was nature at first hand and that opportunities awaited me that do not come to every ornithologist.

I passed several very pleasant and profitable days with Green, and perhaps a few words in description of this splendid rookery, known as the Corkscrew among the plume hunters of South Florida, will not be amiss. In form it is a great ellipse of cypress swamp enclosing an open treeless area some three miles long and a mile or more in width, covered with saw grass and other swamp grasses. The encircling band of cypress varies in width from about one-

third of a mile at the narrow point on the east to two and three miles on the north and west, and to the south it stretches away solidly. Around this great circle birds may be found nesting at many points. Mr. Baynard, who visited this rookery in February, 1912, before the cypress trees had leaved out, gave it as his opinion that there were not less than seven or eight thousand nests of the Wood Ibis here. Tree after tree bore from twelve to twenty or more nests of this species, and in one I counted thirty-two. Years ago before the Egrets and Spoonbills had become so sadly decimated, for they once bred here in large numbers, it must have been a spectacle so imposing as to defy an adequate description. The Egrets, Wood Ibis, and Spoonbills all nest high up in the cypress trees, very few under fifty feet and many seventy-five and eighty feet up. At this season, the middle of March, nearly all the nests contained young. A few of the Wood Ibis and Egrets were still incubating eggs, but these were more than likely birds that had been broken up elsewhere.

Bird studying in a cypress swamp is not all roses, though. It means wading from start to finish, anywhere from knee to waist deep, with a good chance of hitting unexpected depths at any moment. The cypress trees, heavily draped with the Florida long moss, or as it is more commonly known, "Spanish moss," stand close together, vines cross and recross in the openings, impenetrable tangles of button-wood force you to turn aside. Occasionally one comes upon deep, open pools and lagoons covered with lettuce and lily pads, with here and there a half-grown alligator perking up his head. There were big ones in the swamp, too, although I never chanced to see one, but the bellows that emanated forth on a couple of hot nights never came from anything less than eleven or twelve foot 'gators.

Another interesting feature, and one that is not likely to slip your mind for any great length of time, is the dangerous cotton-mouthed moccasin, for he puts in his appearance just about often enough and at just about familiar enough range to keep one on the qui vive. Wading waist deep you come to a nice log and start to climb up onto it. You look again,

a moccasin is within reach of your hand. If he is a small one, he will probably slip off the other side, but if he happens to be four and a half or five feet long and eight or ten inches in girth, he just coils up, opens his white mouth, gently quivers his tail and waits. You will have to kill him or go the other way.

I visited this rookery a second time the middle of April, making the trip across country from Immokalee. Large numbers of the young birds had now left the nests and many were accompanying the old ones to the feeding grounds. In the morning the young Wood Ibis congregated by the hundreds in the cypress saplings at the edge of the swamp just opposite the camp to enjoy the warmth of the early sun. We found one group of Egrets, about fifty pairs, with fresh nests and just beginning the duties of incubation. These were undoubtedly new arrivals, remnants of a shot-out rookery not far away.

To illustrate some of the uncertainties of a cypress swamp. We were three hours reaching this colony of Egrets, located less than a mile within the swamp, although we had visited the same place a month before and presumably knew exactly where it was. The trouble arose from starting in at a slightly different point and encountering a deep lettuce covered lake, in detouring around which we got off our course. By climbing a tree we got a line on the flight of the birds and eventually the croaking of the nestlings drew us to the right spot. In going out we picked up our old trail and were at the edge of the swamp in half an hour.

This rookery has been under the protection of the Audubon Society since 1912. In that year, through the energetic efforts of Mr. Baynard, B. Rhett Green of Fort Myers was hired as warden and assumed the duties of guarding it about the middle of the breeding season. Its future now seems assured, and it is perhaps not too much to anticipate that it will eventually regain something of the prosperity of its former days.

I shall not go into the details or attempt to recount all the various happenings of my trip, for this might finally

become burdensome. During the latter part of March I made an excursion southward from the Corkscrew rookery, following down along the edge of the Big Cypress Swamp to a point some sixty miles below Fort Myers. The first two weeks of April, in company with a guide from Immokalee, I crossed the Ocaloacoochee Slough and penetrated southeasterly to the Seminole Indian reservation at the edge of the Everglades. Then returning to Immokalee, I made a second trip to the Corkscrew rookery from that point.

A few words in regard to the general character of the country. The interior of Lee County is pretty much a wilderness. The Big Cypress Swamp, beginning some thirty miles south of Fort Myers, covers most of the central part of the county. To the north and east of the swamp it is principally open pine woods, interspersed here and there with hammocks of oak and palmetto and small cypress swamps, or "cypress heads," as they are usually called. There are several considerable prairie tracts, particularly in the vicinity of Immokalee. In the eastern part of the county there is another large swamp area known as the Ocaloacoochee Slough. In general the country is low and wet with many small lakes and ponds, and after heavy rains water stands everywhere.

Game is fairly abundant. I saw five deer at one time enjoying a noonday siesta in a small grove of pine trees, and in all I probably saw thirty during my trip. Wild Turkey are plentiful and in the wilder country about the cypress swamps wild-cat, bear and panther are to be found.

Immokalee, with a population of fourteen families, located about thirty-two miles southeast of Fort Myers, is the principal settlement, although there are a couple of other smaller ones. Excepting these the only inhabitants are the Seminole Indians and a few cattlemen, who take advantage of the excellent pasture afforded in some places to graze their lean, half-wild cattle. Maps show several forts such as Shackleford and Simon Drum, but these are relics of the old Indian wars, long since fallen into ruin, and their sites can only be determined with difficulty.

The Seminoles, who number about four hundred, live on a

reservation down at the edge of the Everglades about eighty miles southeast of Fort Myers. They are under the control of a government agent, but do little or no work, depending largely on otter and alligator hunting to pick up a few dollars. For several years back the alligator market has been very flat, and they find plume hunting the more lucrative. We camped with an Indian one evening a few miles south of the Ocaloacoochee Slough, who informed me he had shot eight plumes that season, which he had sold at Miami for $8.00 apiece, bringing him in rather a tidy sum. Incidentally I had the pleasure of dining on palmetto cabbage as prepared a la Seminole, and an excellent dish I found it.

The subject would not be complete without a word or two about insect pests. The mosquitoes are without number. As soon as darkness falls they simply arise in swarms. Sleeping without a bar, and a cheesecloth one at that, is out of the question. Even the Seminoles use them. The steady hum of mosquitoes hovering just outside your bar becomes merely a part of life. The horse flies of this region are the last word. In April it is necessary to wrap a horse in burlap when used, and even then they get to them pretty hard. Around camp a horse will stand right up in a smudge all day, and trust to feeding at night. The cattle are forced to bunch together and retire into the cypress swamps during the middle of the day. Even man is not entirely exempt. A couple of times when dining somewhat en dishabille after a wade in the swamp we were forced to hustle out our shoes, etc., for protection.

In the following list of resident species I have aimed to name only those that I actually found breeding or observed under circumstances which made it seem fairly certain they were doing so. The winter of 1912 and 1913 was unusually warm and the spring early, which had its effect on the nesting of many of the species, causing them to begin in some cases several weeks earlier than in ordinary seasons.

1. *Anhinga anhinga.* Water Turkey. Some four or five hundred were breeding at the Corkscrew rookery. On my first trip into the swamp, March 16th, most of the nests contained eggs, but some of the

young had hatched at that date. Many of the nests were 50 and 60 feet up in the cypress trees, but others were found in low bushes beside lagoons.

2. *Anas fulvigula fulvigula.* Florida Duck. Observed feeding on the marshes, but no direct evidence of nesting obtained.

3. *Aix sponsa.* Wood Duck. A common resident in and about the cypress swamps. One nest found April 18th in a Pileated Woodpecker's hole about 30 feet up in a large pine. It contained nine eggs neatly covered with down. Birds not observed about nest.

4. *Ajaja ajaja.* Roseate Spoonbill. This species is right on the danger mark. I doubt if there are more than 50 or 60 birds in the several rookeries in the interior of Lee County. There were not over ten or twelve pairs at Corkscrew, about a similar number at the principal rookery of the Ocaloacooche Slough, and a few are to be found at the other important rookeries. Nesting usually begins in February.

5. *Guara alba.* White Ibis. Observed feeding in considerable numbers on the Corkscrew marsh during March. They nest during April and May, and at Corkscrew they use the elders and button-wood that fringe the inner circle of the swamp.

6. *Mycteria americana.* Wood Ibis. This species forms the bulk of the population at each of the principal rookeries of the Big Cypress region, and its abundance can be readily inferred from my remarks as to the number nesting at the Corkscrew rookery. Nesting usually begins in January and by March 1st the young are as a rule all hatched. The number of eggs is usually three, occasionally four. This bird is a splendid flier and it is a fine sight to watch them filing in from the feeding grounds, floating high in the air on motionless pinions like great kites, for in their power of flight they are comparable to the raptores rather than to the heron tribe.

7. *Ardea herodias wardi.* Ward's Heron. Fifty or sixty pairs were nesting in the Corkscrew rookery, as a rule in company with the Egrets. Their huge nests are fully twice as large as those of the latter. They are early breeders, usually beginning family duties in January. Also observed nesting in company with Little Blue and Louisiana Herons in willow bushes in ponds.

8. *Herodias egretta.* Egret. The Long White has succeeded in maintaining itself in the face of constant and relentless persecution, for here it has the Seminole Indian as well as the white plume hunter as an enemy. Annually in February the birds gather at the old accustomed rookeries, build their nests and perhaps lay their eggs, and then the plume hunter appears. Each is so anxious to beat the other to it that they scarcely give the birds a chance to get a few sticks piled together, as my guide put it. A few birds are killed, not many, as the birds are wary until the eggs are advanced in incubation or the young hatched. Then they desert the rookery and try it somewhere else, with more than likely the same result. A cattleman told me of coming onto a small

colony nesting in a little cypress swamp late in June, 1912, every plume shed, but incubating eggs. There is still a sufficient nucleus of these birds left in the Big Cypress region, so that the species will build up rapidly if given proper protection.

9. *Egretta candidissima candidissima.* Snowy Egret. Now but a memory in this region. I have asked hunters and the settlers at Immokalee about this bird and the answer is always the same: "About eight or ten years ago I saw one at such and such a place." This Egret is still to be found, however, in the coast rookeries of Lee County and on the Caloosahatchie River near the Everglades.

10. *Hydranassa tricolor ruficollis.* Louisiana Heron. Abundant. Observed nesting in company with Little Blue Herons in clumps of willows in ponds during early April.

11. *Florida caerulea.* Little Blue Heron. Always associated with the Louisiana Heron and remarks about one are equally applicable to the other. Large numbers of immature birds in the white plumage were observed on the feeding grounds.

12. *Butorides virescens virescens.* Green Heron. Not very common. Observed only now and then and not found nesting.

13. *Nycticorax nycticorax naevius.* Black-crowned Night Heron. Observed several times, and it is no doubt a breeding species, although I did not find it nesting.

14. *Nyctanassa violacea.* Yellow-crowned Night Heron. Quite a number nested at the Corkscrew rookery and we used often to come upon them feeding beside quiet pools and lagoons.

15. *Grus mexicana.* Sandhill Crane. Still to be rated as a common bird in Lee County. I hardly believe there was a day of my trip that I failed to see or hear it. They were usually in pairs, though a number of times I saw four or five together. The nesting of this bird is very uncertain. It may begin in late February or it may be deferred to April or May. Mr. Green told me of finding a nest early in June, 1912, with fresh eggs. I am inclined to think the amount of water in the nesting ponds is an important factor. The bird seems to require that its nesting site be surrounded by water. Twice after heavy rains I found them scratching up nests in grassy ponds which they abandoned without using when the ponds began to dry up. Three occupied nests were found, on April 4th and 8th, with eggs far advanced in incubation, and on April 12th with fresh eggs. In this latter case the birds had scratched up no less than four nests in a small flag pond I could throw a stone across. Why the extra nests, two of which were only about half complete, is a question.

16. *Aramus vociferus.* Limpkin. Observed twice in the cypress swamp at Corkscrew, and also feeding on a small lake on the marsh. Presumably there was a small nesting colony in the vicinity.

17. *Ionornis martinicus.* Purple Gallinule. Observed several times on small lakes feeding among the bonnets.

18. *Gallinula galeata.* Florida Gallinule. Identified twice on a small lake on the Corkscrew marsh.

19. *Colinus virginianus floridanus.* Florida Bob-white. Abundant about Immokalee and through the higher and more open pine woods. Nesting in late March and early April. I was told of a nest with 13 eggs being found at Immokalee the last week of March.

20. *Meleagris gallopavo osceola.* Florida Turkey. A common resident throughout the interior of Lee County and should remain so for years to come. I saw many, thanks largely to the dogs that were nearly always along. Late on the afternoon of April 18th as we were working along an open glade bordering a cypress swamp the dog began to nose excitedly in the grass. Suddenly up popped half a dozen little brown cannon-balls, quail I thought, but when they alighted in some cypress saplings I saw at once they were young Turkeys. The old hen, hard pressed, soon rose from the grass and sailed away across the tops of the cypress trees. More youngsters kept popping up until there were eleven sitting about in the saplings some twelve or fifteen feet up. Soon one gave a peculiar little "quit," and then to my utter astonishment flew straight away over the tops of the cypress trees after the old hen, and one by one the rest followed. My guide pronounced them to be about two weeks old and that seemed to me about correct. A few days later the dog ran onto another old hen with young but a few hours old, and we had some trouble in keeping them from coming to harm. The early spring of 1913 caused some of the Turkeys to begin nesting the forepart of March. In ordinary years deposition of eggs does not begin much before April 1st.

21. *Zenaidura macroura carolinensis.* Mourning Dove. Observed occasionally in the pine woods. Not common.

22. *Chaemepelia passerina terrestris.* Ground Dove. Common about Immokalee, and seen occasionally in the pine woods. One nest found April 4th with two fresh eggs.

23. *Cathartes aura septentrionalis.* Turkey Vulture. Present in considerable numbers during the breeding season, but no evidence of nesting found, and it may be that it does not so far south in Florida.

24. *Catharista urubu.* Black Vulture. Abundant. I found no nests, but saw them mating several times. They are a nuisance hanging around a camp, as it is necessary to keep things pretty well covered to be safe.

25. *Elanoides forficatus.* Swallow-tailed Kite. I spent much time looking for the breeding haunts of this species, which is still to be found in certain of the wilder parts of Florida, and was rewarded by finding it nesting at two widely separated points, one far down on the edge of the Big Cypress Swamp, the other near the Ocaloacoochee Slough. It is a bird to be associated with cypress swamps. It loves the broad, open glades that fringe them, and here of a late afternoon you may chance to see them feeding. Gracefully and tirelessly they circle back and forth, chattering as they pass close to one another, and perhaps if the

mood is on them they will take a turn at somersaulting and other startling aerial stunts. They show very little fear of man at such times, for more than once as I have stood watching them they would swing unconcernedly within 30 or 40 feet of me. The birds are to a certain extent gregarious, for where you find one pair there will likely be two or three more nesting within a radius of half a mile or so. The Kite population of the vicinity can easily be arrived at when you start to climb a nest. The cries of its owners quickly attract the other Kites within hearing distance, and they join in the outcry, though at a safer distance. At each of the nests I climbed from five to eight Kites were circling above me by the time I had gotten well started.

It is an exhilarating experience to sit in the top of one of those tall southern pines, with the breeze swaying you gently back and forth, and watch these matchless fliers sweep and careen above you. Only once did I encounter a really vicious bird. Time and again she swooped down on me, once just brushing my shoulder with her wing. It took all my attention to do the climbing and I never knew just when I was to feel the rush of her wings and hear the sudden boom of their arrested motion right at my ear. It was just a little nerve trying.

Two different times I had the good fortune to watch the birds nest building, and both times the ceremony was much the same. The female, escorted by the male, carried the nesting material. With the most graceful of evolutions, accompanied by a constant chatter, very pleasing to hear, and which reminded me much of the love-making of a pair of Barn Swallows, they flew to a point above the nest. The female dropped down for a moment, arranged the stick or bit of moss in the nest, then rejoining the male away they went chattering as far as one could follow them.

The nests I examined were made of dead cypress twigs and Spanish moss, and were lined abundantly with a soft, silky, green moss plucked from dead cypress trees. In all I found six nests. Two were in the process of construction, the other four contained two eggs each. Five were in pine trees, the sixth in a tall slim cypress. One was at the comparatively low elevation of 55 feet, the highest about 85 feet up and well out on a branch running off at an angle of 45 degrees, the most difficult climb of them all. This last mentioned nest I collected together with the eggs, first crawling out and securing the eggs, then roping up the limb and cutting it off with a hand axe. Nesting dates were March 17th, an unusually early date, perhaps a record, March 28th, April 7th and April 21st. In the latter case the eggs were half incubated. The dates when observed building were April 6th and 7th.

26. *Circus hudsonius.* Marsh Hawk. Observed several times quartering over marshes and ponds during April, and I am inclined to think it nests here.

27. *Buteo borealis borealis.* Red-tailed Hawk. This species is rare in Lee County. One nest found April 5th about 20 miles south of the

Ocaloacoochee Slough. It was about 75 feet up in a big pine. Unfortunately a cattleman, who chanced to take dinner with us near the spot, had shot the female about three weeks previous. Her body lying under the tree was sufficiently preserved to make certain of the identity.

28. *Buteo lineatus alleni.* Florida Red-shouldered Hawk. By far the most abundant of the hawks. Fully 20 nests were seen and no especial effort made to find them. Seven which I examined had either two eggs or two young, not a single one three. The birds nest either in pine or cypress, and where available use large quantities of Spanish moss. Nesting dates: March 15th incubated eggs, April 7th eggs far advanced in incubation, April 3rd half-grown young.

29. *Buteo brachyurus.* Short-tailed Hawk. Rare. Found breeding by Baynard in February, 1912.

30. *Haliœetus leucocephalus leucocephalus.* Bald Eagle. There was one large nest in a pine standing at the edge of the Corkscrew marsh. As breeding begins in November, the young had already left.

31. *Falco sparverius paulus.* Florida Sparrow Hawk. Moderately common resident of the pine woods and hammocks.

32. *Polyborus cheriway.* Audubon's Caracara. Nowhere common. It prefers the more open country and the palmetto hammocks, this tree being its favorite nesting site. I found a nest on April 5th about 50 feet up in a pine, containing two half-grown young. Green reported seeing two young just out of the nest at the edge of a palmetto hammock April 15th.

33. *Pandion haliaëtus carolinensis.* Osprey. There were two occupied nests in the Corkscrew cypress swamp. One was a huge affair planted squarely on the top of a limbless cypress stub, 60 feet up. At both nests the birds were incubating eggs the third week in March and were very noisy as long as we remained in the vicinity.

34. *Strix varia alleni.* Florida Barred Owl. Abundant. Their nightly serenades were one of the most interesting features of camp life. On March 16th, while exploring a little cypress head, I found a young one about 15 feet up in a sapling. He could get about the limbs and work from tree to tree too lively for me and I tried in vain to catch him. During the proceedings the mother came up close, ruffling her plumage and clicking her bill savagely. On the above basis it would seem that nesting begins early in January.

35. *Otus asio floridanus.* Florida Screech Owl. Apparently not very common. Heard two or three times about hammocks.

36. *Bubo virginianus virginianus.* Great Horned Owl. A rare resident. Heard once down on the edge of the Big Cypress Swamp.

37. *Speotyto cunicularia floridana.* Florida Burrowing Owl. This interesting little Owl is nearing extinction. On the prairie near Immokalee I could find only four or five pair nesting where formerly it was abundant. The hand of the cattleman is against it. A couple of bur-

rows excavated April 4th showed the birds just getting ready to nest. One contained one egg.

38. *Campephilus principalis.* Ivory-billed Woodpecker. In Florida this splendid Woodpecker is now confined to the wildest and remotest swamps. Far down in the Big Cypress I had the good fortune to see and hear it, the reward of hours of laborious wading. It is readily distinguishable from the Pileated Woodpecker in flight by the large amount of white on the wings. Its call is quite different, too. There is a distinct pause between the notes and it lacks the carrying power of that of the Pileated. Two nesting sites of former years were seen, both in cypress trees. They may be identified with certainty, as the hole is somewhat oblong in shape, the height being to the width in about the ratio of three to two. The birds also have the peculiar habit of stripping the outer bark from the trunk for a considerable distance below the nest.

39. *Dryobates borealis.* Red-cockaded Woodpecker. Locally distributed in the higher pine woods. Several nesting sites noted. These are cut into living pines with dead hearts, and the trunk for several feet below the nest is thickly smeared with pitch.

40. *Phlœotomus pileatus pileatus.* Pileated Woodpecker. Common and observed almost daily. Three nests were found, all in dead pines, one with three slightly incubated eggs April 5th, a second on the following day with three half-grown young, and the third April 18th, in which the birds were feeding young. One fact that I noted several times is that this bird feeds on the ground after the manner of the Flicker.

41. *Melanerpes erythrocephalus.* Red-headed Woodpecker. Common, but less so than the two following species. Beginning nesting in April.

42. *Centurus carolinus.* Red-bellied Woodpecker. Common and nesting in March. I found one pair appropriating a former nesting cavity of the Red-cockaded Woodpecker.

43. *Colaptes auratus auratus.* Flicker. Common throughout the pine woods. Nests with fresh eggs April 19th and 23rd.

44. *Antrostomus carolinensis.* Chuck-will's-widow. Common in the hammocks, but rare elsewhere. Nesting in April.

45. *Chordeiles virginianus chapmani.* Florida Nighthawk. Observed during early April near Immokalee and it probably nests there.

46. *Tyrannus tyrannus.* Kingbird. A common resident of the pine woods. Saw my first Kingbird March 21st and in a day or two they were plentiful. Observed a pair building April 19th.

47. *Myiarchus crinitus.* Crested Flycatcher. Abundant. The small cypress heads are their favorite haunts and nearly every one harbors a pair or two. They were common everywhere when I first entered the woods March 14th. Nesting begins in April. On the 7th I observed a bird carrying material into a hole in a small cypress tree, and on the 17th I picked up part of an eggshell from the ground.

48. *Cyanocitta cristata florincola.* Florida Blue Jay. A few were observed about hammocks, but not commonly. No nests found.

49. *Corvus brachyrhynchos pascuus.* Florida Crow. Abundant and many nests seen. Eggs far advanced in incubation March 17th.

50. *Corvus ossifragus.* Fish Crow. Found only in the vicinity of rookeries, particularly at Corkscrew, where they do a great deal of damage. Collected a set of five slightly incubated eggs March 28th, the nest being in the bud of a slim pine.

51. *Agelaius phoeniceus floridanus.* Florida Red-wing. Common on the marshes and larger ponds. Nesting in April.

52. *Sturnella magna argutula.* Southern Meadowlark. Abundant in the open pine woods and prairies. Nesting dates: March 25th four fresh eggs, April 4th three incubated eggs.

53. *Quiscalus quiscula aglaeus.* Florida Grackle. We found quite a colony nesting in cavities in the cypress trees at Corkscrew March 20th, and the latter part of April I found another group making use of similar sites in a small cypress head.

54. *Megaquiscalus major major.* Boat-tailed Grackle. Observed nesting in several ponds in early April. Common where it can find suitable haunts.

55. *Ammodramus savannarum floridanus.* Florida Grasshopper Sparrow. Rather common on the prairies. I scratched up a lot of grass looking for their nests when flushed at close range, but was no doubt too early for them.

56. *Pipilo erythrophthalmus alleni.* White-eyed Towhee. Very local and not common. About Immokalee quite a few were seen.

57. *Cardinalis cardinalis floridanus.* Florida Cardinal. Common near Fort Myers and about Immokalee, but almost entirely wanting in the wilder sections.

58. *Progne subis subis.* Purple Martin. In early April half a dozen pair were nesting in woodpecker holes in a couple of dead pines near Immokalee.

59. *Lanius ludovicianus ludovicianus.* Loggerhead Shrike. Observed only in the orange groves at Immokalee.

60. *Vireo griseus maynardi.* Key West Vireo. Not common. Seen only a very few times. One nest found April 10th containing four fresh eggs.

61. *Geothlypis trichas ignota.* Florida Yellow-throat. Noted frequently about the saw palmetto growth in the vicinity of Immokalee. Apparently nesting about the middle of April.

62. *Mimus polyglottos polyglottos.* Mockingbird. Like the Cardinal the Mocker prefers the haunts of man. They were common at Immokalee, but I don't think I ever saw one in the wilder country.

63. *Thryothorus ludovicianus miamensis.* Florida Wren. A common resident. I saw a nest in an old tin coffee can hanging on the side of a shed at Immokalee April 4th. At Green's camp a pair built in the

pocket of an old sweater. I also saw a nest in a natural cavity of a gnarled pine tree at the edge of cypress swamp 20 miles from any human habitation.

64. *Sitta pusilla.* Brown-headed Nuthatch. Moderately common resident of the pine woods. Saw a pair building March 16th, and another pair feeding young April 18th.

65. *Sialia sialis sialis.* Bluebird. Quite common in the pine woods. Observed them about nesting holes several times in April, but examined none.

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EDITORIAL

The editor's address for the summer—until the middle of August—will be Sandusky, Ohio, care Dr. C. B. Bliss. Mail addressed to Oberlin will reach him, but will be delayed somewhat in reforwarding.

The short time between the two issues of the BULLETIN and the examination season have conspired to prevent reviews of literature for this number of the BULLETIN. They will be resumed in the September number.

Interest in studies of the nesting behavior of birds has increased manyfold in the last five years. While July may seem to be rather late for most birds to nest, experience has proven that nests of many of our common birds may be found even into August. Studies of nesting behavior are exceedingly valuable and ought to be taken up more generally over the country before we may hope to get far in our understanding of the inner life of the birds. The intimate study of the Red-winged Blackbird at Ithaca by Mr. A. A. Allen well illustrates what valuable results may be achieved by faithful and long continued studies of this sort, and the papers by Miss Sherman, Mr. Gabrielson and others well illustrate that valuable facts may be discovered by even a one-nest study. Let everybody try at least one nest.

FIELD NOTES

A TWO-STORY YELLOW WARBLER'S NEST.

We have found a yellow warbler's nest with a cowbird's egg in the bottom, over which the warbler had built a second floor on which to lay her own eggs. E. A. Fields.

Sioux City, Iowa.

PARTICULAR WRENS.

A pair of wrens had reared a brood in a box on our back porch and were preparing to raise a second brood, when the cover of the box was loosened by the wind and was tied down with a white string. This aroused suspicion on the part of Mrs. Wren, who immediately removed the six eggs and part of the nest. I removed the rest of the nest, but the wrens did not use the box again. What became of the eggs I do not know, as there was no trace of them either in the box or on the porch.

Sioux City, Iowa. E. A. Fields.

COWBIRDS MONOPOLIZING A RED-EYED VIREO'S NEST.

In the woods bordering Lake Okoboji, Iowa, in July, 1912, some bird lovers discovered a daintily constructed red-eyed vireo's nest, covered with a pure white, web-like substance, making it the most beautiful nest we had ever seen. Evidently we were not the only ones attracted to it, as it contained four cowbird's eggs and no vireo's eggs. While we examined the nest the vireos, much disturbed, sat on a branch near by. We removed the eggs and returned a week later, hoping to find that the proper owners had used it, but the nest was empty and another vireo's nest was being built near by, presumably by the same birds.

Sioux City, Iowa. E. A. Fields.

THE RED PHALAROPE IN IOWA.

Through the kindness of Mr. A. J. Anderson I was permitted to see a specimen of *Phalaropus fulicarius,* which had been shot on a sandbar in the Missouri river below Sioux City. It was presented to Mr. Anderson on November 28, 1912, and had been taken a day or two before. The bird was in the white winter plumage. It was mounted and is now in Mr. Anderson's collection. It seems that this species has never heretofore been reported for either Iowa or Nebraska. T. C. Stephens.

FALL RECORD OF THE GOLDEN PLOVER.

On October 15, 1913, my friend, Mr. Fred C. Smith, learned of large flocks of strange birds along the Missouri river bottoms near the villages of Owego and Holly Springs. Word came to the Sioux City sportsmen of the abundance of these birds, and several went down. Mr. William

Anderson shot several and one of these was taken to the Stag Cigar Store, and there identified as a Golden Plover. Mr. Anderson described the birds as having a short bill and a "black back speckled with greenish yellow." Dr. B. H. Bailey, with whom I interviewed Mr. Anderson, was satisfied of the correctness of the identification.

A Dr. Flageau, of Holly Springs, reported that large flocks of these birds, which were locally called "Prairie Pigeons," had been seen in the vicinity for the past ten days "feeding on the winter wheat." Mr. Anderson thought they were feeding on the crickets and grasshoppers rather than the wheat.

A Mr. Williams, of Owego, was also quoted as having seen these birds in large numbers about the same time. Mr. Anderson says he was able to obtain very few birds because of their shyness. When disturbed they would fly up very high in the air, circle around, and finally fly away. T. C. STEPHENS.

SOME WINTER RECORDS FROM MARSHALLTOWN, IOWA.

During the winter of 1913-1914 several records of unusual interest to me were made in this locality.

Red-headed Woodpecker (*Melanerpes erythrocephalus*). In the fall long after the other individuals had left three of this species were to be seen about the cemetery. Every time I passed thru that region I expected to discover that they were gone, but they remained thru the winter. The cemetery contains large numbers of oaks of different species and the Red-heads used the acorns, particularly those of the white oak, for food. These three birds were to be seen at any time either feeding or fighting with the Blue Jays. They had one particular tree which they seemed to use as a sleeping place, and they allowed no Jays to remain in that vicinity.

Red-bellied Woodpecker (*Centurus carolinus*). This species was another form which I was surprised to find here during the winter. I have regarded this as a rather rare bird in this locality, as the only other specimen noted in two years' field work was one taken April 4, 1913. This second specimen remained all winter in the cemetery and is still here at the present writing (May 5). This bird was much more shy than the Red-heads and not so noisy, but we managed to see him on nearly every trip during the winter.

Tufted Titmouse (*Bæolophus bicolor*). On the 25th of January, as I was walking thru a small willow thicket, a small bird flew into a bush not ten feet in front of me. It was snowing hard at the time and this made any observation work difficult. However, I recognized the bird as one of this species and after considerable maneuvering managed to secure him. A short time later another was secured. This is another form which I have considered rare, the only other record being a pair noted on two different dates in April, 1913. IRA N. GABRIELSON.

NESTING OF THE BLUE-WINGED WARBLER IN NORTHERN ILLINOIS.

Apparently the blue-winged warbler is not common in this area even in migrations. However, some few observations made at a time when the presence of the bird argued the likelihood that it had remained to breed in the locality are on record, and Mr. Frank M. Woodruff in "Birds of the Chicago Area" has been led to say, "It does not seem impossible that a very few individuals may remain and breed within our limits."

On May 23 while pushing my way through cover of lesser growth, but comparatively free of underbrush—a rather damp part of the woodland, at its edge and situated between its higher slopes and the creek bottomland—I came upon a nest new to me but quite certainly the nest of a warbler. There were no eggs nor for a time was any bird in evidence. Presently, however, I caught sight of a small yellow head peering out of the greenery. That, I believe, was the male; for my next glimpse was of a bird not so bright but exhibiting some alarm in frequent chippings though for the most part contriving to keep in concealment.

Upon revisiting the nest, May 29, accompanied by Dr. Frederick C. Test, I found it to contain four small, delicately marked eggs, but, as before, the birds were shy and it was only after a considerable interval of waiting that Dr. Test and I were able to descry the female. She kept to the higher branches of the nearby trees, and while manifesting alarm in nervous chipping, seemed indisposed to make the fearless approach common to most of the smaller birds when their nests are threatened.

The nest was placed on the ground and supported by the three stems of a small choke-cherry shrub, to which it was not in any manner attached. It was composed of oak leaves, the stems up-pointed, strips of grape-vine bark and a few coarse grasses. The lining was of long fibres of plant stems, brown in color, and some horse hair.

The record refers to a locality near Fort Sheridan, Lake county, Illinois.

Edward R. Ford.

THE FOX SPARROW IN CENTRAL ILLINOIS.

On December 28, 1912, while out on a bird "hunt," my brother and I noticed a bird flying along a hedge before us. At first we thought it was a brown thrasher, but soon we found our error and identified it as a fox sparrow (Passerella iliaca). We soon noticed that it was in some way crippled, and at last we saw that its right wing was not fully developed. It was able to fly short distances easily and avoided capture.

During the winter we saw it again on February 16, 1913, with a companion of the same species, so that our fears for its surviving the winter were allayed. It was easily identified as the same individual we had before seen by its wing. On February 23, 1913, it was again seen

with a companion, as it was again March 16. It was recorded by itself on March 24 and 26, but with a companion on March 30. From that date it was observed with or without a companion (which being so often seen with him, and being somewhat lighter colored, was finally concluded to be his mate) on the following dates: April 1, 6, 8, 9, 10, 19; May 5, 8, 12, 23, 29; June 16, 25; July 12, 24; August 15; September 9 and 21. In October he was observed several times, but with others of his kind, which we gathered, from their actions, were not only of his kind, but of his family. Although no nest could be found, I feel certain that this maimed bird and his mate raised a brood of young fox sparrows in this vicinity. The birds were always found in an abandoned roadway about a half mile from my home. I am also glad to say that our hero's wing seemed to develop during the summer, and though not as strong as the other nor as large, he got along very well and would take long flights without much trouble. GEORGE E. EKBLAW.

Rantoul, Ill.

NOTES FROM HURON, ERIE COUNTY, OHIO.

Found a Black-bellied Plover in an oat field half a mile south of Huron on May 24.

A pair of Prothonotary Warblers have been around Huron for several days prospecting for a nesting place. I had always supposed that these birds were swamp-loving birds, but this pair stay around houses. They were trying to get into wren boxes, and yesterday (May 24) they started building in an empty sprinkling can hung up on the back of a house. They have been around today, but have not done any more building. H. G. MORSE, Huron, Ohio.

TWO NEW BIRDS FOR OBERLIN, OHIO.

Apparently a season of erratic weather conditions is favorable for the appearance of extralimital species. The spring migration of 1914 in northern Ohio will be remembered for the late beginning of the first wave of migration and for the extreme variations from normal of many migration records of first arrival and dates for the arrival of the bulk. The curve of migration was about sixty-five per cent abnormal. The Carolina Chickadee made its first appearance in Oberlin and for the general region on February 27 and remained in the village to April 21. There was a single individual.

Bewick's Wren was taken on April 20. It has been found in the region on three other occasions, but never before in the village.

In this connection it may be worth notice that the Hooded and Prothonotary Warblers were more numerous than ever before.

LYNDS JONES, Oberlin, Ohio.

A CANNIBAL GRACKLE.

The morning of May 30 in crossing the mall to the Smithsonian Institution, I noticed what appeared to be a fight between a Purple Grackle and an English sparrow, and stopped to see the outcome. The Grackle held the sparrow by wing or leg under its feet and pecked savagely at the head. The fluttering sparrow escaped two or three times, but was instantly recaptured. Presently the Grackle began swallowing the grewsome contents of its bill obtained from the still fluttering sparrow. I did not wait to see more, but at noon I sought the spot and found a dead female English sparrow with the back of the head laid bare to the skull. So far as I could see it was not injured elsewhere.

Is the Purple Grackle a bird of prey or was it a fight to the death only, the blackbird swallowing his billsful merely to get rid of them? Was he after a meal or after revenge? As the little corpse was covered with ants when I found it I could not be sure whether the Grackle had eaten the brains or whether the ants had emptied the skull they now filled.

Dept. Agriculture, Washington, D. C. AGNES CHASE.

GENERAL SITE OF PROTHONOTARY WARBLER'S NEST
At least four of the cans on the trees are to be seen

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THE PROTHONOTARY WARBLER AT LAKE OKOBOJI, IOWA.

By T. C. Stephens.

On July 4, 1914, our entire camp* was taken on an excursion along the southwest shore of Lake Okoboji, Iowa. At noon the party was to eat lunch at a point on the west shore known as Elm Crest. They had been carried in relays across Emerson's Bay so that the first to reach the destination had some time at their own disposal before the last ones arrived.

As I came up I was met by Mr. H. C. Pollock who, with evident excitement, informed me that he had seen a bird which he thought must be a Prothonotary Warbler. I was naturally a little skeptical as to the identification, but nevertheless anxious to see what he had found.

We were in the immediate vicinity of a summer cottage owned by Mr. A. J. Goodell, which had, as yet, not been opened for the season. It was surrounded by a heavy growth of timber, mostly oaks. Very soon we heard a clear, but gentle, "*weet, weet, weet, weet,*" and Mr. Pollock exclaimed, "There is the bird"; and it was but a moment till we had our glasses focused upon her.

* Students of the Macbride (Iowa) Lakeside Laboratory.

NEST OF PROTHONOTARY WARBLER REMOVED FROM THE CAN

The head, throat, and breast appeared to be a bright lemon yellow (the orange tinge was not noticeable at this distance); the wings and tail were dark, the former appearing to have a distinctly bluish cast. Above the nearly black tip of the tail there was a distinct band of white. The black bill was unusually long for a warbler. As we watched a second bird came within view.

These characters, so clearly recognized, convinced us at once that we had, indeed, stumbled upon a pair of Prothonotary Warblers (*Protonotaria citrea*). My next thought was that the birds must be breeding; and after about five minutes' close watching, I saw one of the birds fly low and direct to an empty tin can nailed to the trunk of a tree not more than ten feet from the cottage. Immediate examination revealed a single young bird, which was almost ready to leave the nest.

The location of the nest was a thickly wooded and elevated point of land projecting into the lake on the west shore. At the highest elevation, but scarcely over fifty feet from the shore line, stood the cottage. The underbrush had been cleared away from the front of the cottage, and at the sides for a distance of perhaps a rod.

We now noticed that on the trees around the dwelling, at intervals of ten to fifteen feet, there had been put up empty tomato cans for the use of birds—especially the house wrens, which are so abundant around the lake. These were mostly at about the height of a man's uplifted hand, viz., about seven feet. The warblers had selected one whose opening faced the south.

The photograph will describe the external appearance of the nest site sufficiently.

Subsequently the nest was removed from the can for examination. Only two materials seemed to enter into its composition to any noticeable extent. The great bulk, or "foundation," consisted of a tangled mass of moss. The lining consisted of dried grass of rather coarse grade. Roughly, the cavity of the nest measured 70 mm. in diameter.

While we were watching the birds, the owners of the cottage arrived for their summer sojourn. We explained to them that the grounds were already tenanted, and found them to be very much interested in the welfare of their distinguished bird guests.

The next day Mr. Goodell walked a good mile around the lake shore, about noon, to tell me that the young warbler had left the nest that morning about nine o'clock, and that they were keeping track of its whereabouts until I could arrive. About two o'clock the young bird was banded with the number 16291, and returned to its home—the tin can—where it seemed perfectly contented to remain. By this procedure we hoped to entice the parents to visit the nest and feed, in order that we might make photographs. In this we were entirely successful, for within five minutes one of the parents had discovered the young and visited it with food.

The feeding visits were then continued with frequency during the remainder of the afternoon, and we made over a dozen exposures of the old bird in the process of feeding. Unfortunately, all but two of the plates were underexposed. The photograph here reproduced shows this bird in a somewhat different attitude from that usually depicted in the illustrated accounts of the species.

Usually, if undisturbed, the parent flew directly to the nest, alighting on the disc of tin cut out for an entrance and bent into a horizontal position. However, if at all alarmed the approach was made more cautiously. It would, under such circumstances, alight on the tree trunk or small twigs ten or fifteen feet above the nest, and descend by hopping from twig to twig; or, by simply clinging to the bark of the tree, and hopping, neither backward nor head-first, but sidewise. Of course it is quite possible that the two methods of approaching the nest here mentioned may have belonged to the male and female birds respectively, but in the short time the sexes were not distinguished.

No effort was made to recognize the food brought, but in one instance a green larva was noticed. The photograph also shows some insect in the bird's bill.

It was very evident from the old bird's actions that she was trying to coax the young one out of the nest. She would remain nearby twittering and calling for a considerable time before going to the nest to deliver the food she carried. The young bird left the nest the following day (Monday) and neither young nor old birds were seen again, although the vicinity of the nest was visited a number of times later. Although no other young were seen, it is quite likely that the one we found was the last one of a larger brood to leave the nest.

The distribution of the Prothonotary Warbler in Iowa does not seem to be fully known. It has been observed along the Missouri river as far north as Mills county, Iowa, and possibly at Sioux City. Its plentiful occurrence along the upper Mississippi river is well recorded by Dr. T. S. Roberts (see the Auk, XVI, 1899, pp. 236-246). The only published account, apparently, of its distribution within the state of Iowa occurs in Anderson's *Birds of Iowa,* from which the following paragraph may be quoted:

"It is a bird of southern distribution and is only tolerably common along the bottom lands of the larger rivers in southern Iowa. It reaches to about its northern limit on the Iowa river in Johnson county, on the Cedar river in Blackhawk county (Peck), and the Des Moines river in Webster county (Somes). Dr. Trostler reports it as a common summer resident, but becoming scarce, in Mills county on the Missouri, while Dr. Rich reports it as rare at Sioux City. Dr. B. H. Bailey shot two males at Lansing, Allamakee county, Iowa, in 1904. The most northern record outside of the Mississippi bottoms was one male, seen along the Des Moines river in Kossuth county, by W. H. Bingaman, May 20, 1901. The bird was not taken, but identity is positive, Mr. Bingaman having found many nests in southern Illinois."

Dr. Roberts (Auk, XVI, p. 240) refers to an "indefinite record" for the region of Heron Lake, Minnesota, only about twenty-five miles directly north of Lake Okoboji, but which he thought was a mistake in identity. I have no information as to the authority for this record and am unable to judge as

PROTHONOTARY WARBLER ABOUT TO FEED YOUNG

to its value. This Okoboji record, however, would tend to make the Heron Lake record probable.*

An interesting problem which naturally arises is as to the route by which these birds reached the lake region (referring solely to the Okoboji record). It is not a great distance along the Des Moines river from Webster county, where the species has been recorded, to the lake region. But the Des Moines valley lies on the east of the divide, while the lakes are on the west; and there are no streams or valleys connecting. The actual distance across from the Des Moines valley to the lakes at this point would only be about eighteen miles.

However, if the birds follow the river valleys strictly in their migration (and, consequently, in extending their range) we must look to the Missouri river drainage basin for the route of the Okoboji birds. From the investigations of Loucks, Roberts, Adams, and others, it seems to be pretty well established that the species in question is very closely restricted to the river valleys in its movements, as well as its breeding.

The outlet of Lake Okoboji is through a chain of several smaller lakes (including the Upper and Lower Gar lakes, and Lake Minnewashta) into a shallow and swampy creek which empties into the Little Sioux river about a mile below the town of Milford. This river, after traversing the northwestern portion of Iowa, finally empties into the Missouri river about midway between Sioux City and Council Bluffs.

Taking into account the Missouri river records above referred to, it seems very probable that the Prothonotary Warbler has pushed up the Little Sioux valley to the lake region of Iowa. We may, therefore, await with some interest reports from points in the Little Sioux valley with reference to this species.

The authors cited are as follows:

1. Loucks, W. E. The Life History and Distribution of the Prothonotary Warbler in Illinois. Bull. Ill. State Lab. Nat. Hist., IV, 1895, pp. 10-35.

* In response to an inquiry Dr. Thos. S. Roberts writes me under date of August 21, 1914, in which he states that the Heron Lake Record has never been published otherwise than by the negative reference in his article above cited. He also assures me that his reference to the bird in this locality must not be considered a "record," for he placed no reliance on the information as it reached him.

2. Roberts, Dr. Thos. S. The Prothonotary or Golden Swamp Warbler *(Protonotaria citrea)* a Common Summer Resident of Southeastern Minnesota. Auk, XVI, 1899. pp. 236-246.

3. Adams, C. C. The Migration Route of Kirtland's Warbler. Bull. Mich. Ornith. Club, V, 1904, pp. 14-21.

4. Anderson, R. M. The Birds of Iowa. Davenport, Iowa, 1907.

Sioux City, Iowa.

HABITS OF THE OLD-SQUAW (*HARELDA HYEMALIS*) IN JACKSON PARK, CHICAGO.

BY EDWIN D. HULL.

INTRODUCTION.

The following notes are the result of three winters' study of the habits of the Old-squaw in Jackson Park, Chicago, Ill., from 1912 to 1914 inclusive. It is regretted that observations could not have been made for a few years more, and it is conceivable that exceptions to some of the statements contained herein might be made through additional study, but it seems advisable to publish what observations there are, as the stock of information concerning our waterfowl is generally conceded to be woefully deficient.

PREVIOUS LITERATURE.

I have been able to find but two extensive papers on the habits of this bird, both of which have been noted carefully. In 1892 G. H. Mackay (Auk 9: 330-337. 1892) gave an excellent account in a general way of the species in New England, where the birds were observed almost exclusively on salt-water. In 1913 a more intensive study was recorded by J. G. Millais (British Diving Ducks, Vol. 1, 112-131. 1913). The notes here, however, relate mainly to the habits of the species in the Old World, and likewise on salt-water. No

extended account of the habits of the species inland seems to have been written, and it is in part to supply this deficiency that the following notes are recorded.

ENVIRONMENT.

Jackson Park is noted for its beautiful chain of lagoons, which bears a striking resemblance to a large river. Both ends of the chain are connected with Lake Michigan, at the connections being spanned by bridges. The lagoons in the main are broad and fairly deep at the middle, but become very narrow in places, more especially at the several bridges. Along the sides in shallow water are broad zones of the crisped pondweed (*Potamogeton crispus*), a European plant, not long in this region, but already exceedingly abundant and vigorous. With this species occur a few less conspicuous plants. Rocks have been thrown in about the edges in places. The lake itself which borders the park on the east is sheltered much by a harbor and somewhat by piers built into it. The plants, rocks and piers constitute a very favorable habitat for immense swarms of silvery minnows (*Notropis atherinoides*), which seem to be almost if not entirely the sole source of food for the Old-squaw in this locality.

OCCURRENCE AND ABUNDANCE.

Where two or more birds are found together they do not appear until severe weather sets in, and the lake is covered more or less with ice, but leaving several open places here and there, especially about the piers, where the birds are able to obtain food. My earliest record is January 28, 1912, when eleven were seen, and the latest February 27, 1913, when four were seen. The occurrence of flocks and twos is certainly determined by the weather. Solitary individuals may appear much earlier and remain much later. My earliest record is December 14, 1913, and the latest May 6, 1912. Another very late record is April 8, 1914. In two cases at least these early or late birds appeared following a cold wave, but they were associated with the Lesser Scaup, and in all

probability were not so much dependent on the weather as on the migrations of the Scaups, less boreal in habit and the most abundant ducks in this region. They may, however, remain after the Scaups have left for the south, and also leave ahead of the Scaups in the spring, after sojourning with them a day or more, so that the weather plays a rôle even here, but is not the only factor.

The ducks in twos or more keep to the lake or more rarely in the harbor, and only the solitary ducks enter the lagoons, and not then except when they occur with the Scaups. In midwinter the lagoons are usually frozen solidly over, but exceptions occur, so that the absence of the flocks from them cannot be always thus explained.

The birds seem to be growing scarcer every year. The size of the flocks is decreasing rapidly, and single birds are very common. The largest flock noted was eleven in 1912, and the next largest six in 1913.

SOCIAL LIFE.

The birds when more than one keep to themselves, but when isolated are quite likely to be seen with other species, although occasionally utterly alone. If the birds are mated at this season of the year it is hardly possible to pick out the pairs on account of all the birds keeping together. Furthermore, even numbers, which might indicate pairs, are not one-half so common as odd numbers, which show, of course, at least one unmated bird. The birds seen in twos are not paired, either, so far as can be ascertained. Single birds have been found associated with the Lesser Scaup and the American Goldeneye, particularly during periods of inactivity, although when feeding they may desert the other species. Quite often the Scaups feed in too shallow water, as along the edges of the lagoons, to suit the tastes of the Old-squaw, while the Goldeneyes often feed in water entirely too deep. A bird seen February 17, 1914, with a small flock of American Goldeneyes out in the lake quite a distance from the piers left the flock when it wanted to feed, and came to the piers, where the water was much more shallow, but after its hunger was

satisfied returned to its companions. Even when the Golden-eyes were diving vigorously in the deeper water the Old-squaw made no attempt to imitate them. In their association with these other species the Old-squaws keep somewhat aloof, and never display the same familiarity with the birds of a different species as do the individuals of a single species toward each other. They generally keep a certain distance away from the birds of another species, and may even attack them if they get too close; similarly the birds of another species may attack them.

FOOD.

The feeding ground is a place apart, but mainly close to the resting ground, so that it is reached by a brief swim. After feeding the birds return to their resting ground. When a suitable feeding locality is once found the birds return to it again and again, and likewise the same resting ground is repeatedly chosen.

The food no doubt is almost entirely animal, and would seem to be restricted to a single species of fish, the silvery minnow, a long slender fish which fairly swarms about the piers and in the lagoons. The stomach of an adult female found floating in a lagoon April 1, 1912, contained approximately 140 of these minnows, all entire, besides many fragments of the same fish, but no other food. The fish averaged about two inches in length. Another fish very abundant in this region is the yellow perch, but it is rough and spiny, and is no doubt avoided, as so much better food can be had. Whether any vegetable food is utilized is uncertain. An adult male was seen to be nibbling along the sides of a bit of loose piling, as if scraping off algae, but this may not have been the case.

The food is swallowed under water. Millais says concerning a pair of tame birds that they swallowed pieces of food smaller than a minnow below usually, while larger pieces were brought to the surface and vigorously shaken. I have yet to see, however, any bringing of food to the surface of the water.

DIVING.

Millais says that in diving they use the feet only, but according to Chapman after Townsend they use their wings (Birds of Eastern North America, p. 198, 1912). My own observations confirm those of Townsend. March 13, 1914, I was fortunate in witnessing the diving of an exceedingly tame bird about the piers. In this bird the movement of the wings was very plainly visible for some time as it dived obliquely in the clear water.

In all but one instance the birds spread their wings and disappear almost immediately, but the bird of March 13, 1914, just noted, adopted a much more leisurely method. It first put its head under water, then moved forward a few feet with wings folded, then flapped its wings a few times, moving forward all the while, and finally disappeared beneath the surface. In feeding this action was invariable in all the observations made. When frightened, however, this bird dove as quickly as any other. The diving as observed in this bird, as I have stated, was in a very oblique direction. The bird started many feet out, diving towards the pier, and on reaching it turned and worked along the pier for some distance before rising to the surface. Once it was seen to dash just beneath the water for the pier, and on reaching it come at once to the top. In diving much splashing is made, which is not the case in a duck which dives with folded wings, as in the Lesser Scaup. The time spent under water was noted in nineteen instances, the maximum being twenty-five seconds, minimum ten seconds, average about eighteen seconds. Food was probably easily obtained, however, and the water relatively shallow. No doubt a much longer time could be endured. Millais gives the usual time as being from thirty seconds to one minute.

VOICE.

In flocks the Old-squaws are noisy birds, as noted by Mackay, and their cries are adequately described by him. I have found single birds, however, with but one exception, absolutely silent. The single exception was the bird occur-

ring with the Goldeneyes February 17, 1914, cited under "Social Life." This bird in leaving its companions for the piers to feed, on its way called a few times at fairly definite intervals, a subdued call of two notes, best described, perhaps, as *o-onc*. The significance of this brief cry could not be determined with certainty. It was noted that the bird in going to its feeding ground was alert, so that this call may have indicated a slight alarm.

FLIGHT.

Birds in flocks are often very active, but single birds are inclined to fly very little if at all. Even when badly frightened they will try to escape by diving instead of taking wing. In spring, however, when they are about to depart for the north, they become more active. The bird seen April 8, 1914, took wing when scared, and another seen March 22, 1914, would sometimes fly from its feeding ground about the piers farther out into the lake, where it rested. But ordinarily single birds will not fly even when the other ducks with which they are associated take flight. This unwillingness to fly would seem to bear no relation to age, for a bird which could not be induced to take flight under any circumstances was an adult male upon which I made observations from December 14 to December 28, 1913 (see Auk 31: 244, 245. 1914). According to Millais, however, young birds will not rise on their first arrival from the north, differing in this respect from the adults.

BATHING.

Bathing is not undertaken except after diving for food, and in one instance, where the bird made a single dive, no bathing followed at all. Occasionally after feeding the bird delays bathing in order to preen, but more often preening follows bathing. In cases of prolonged feeding bathing may take place at different intervals, a period of diving being followed by a period of bathing. Once after a bird had bathed it climbed out on a bit of piling, and on getting off bathed again. Bathing very seldom takes place on the feeding

ground, the action being delayed until the resting place is reached. In one instance, however, a bird was seen to bathe while coming from its feeding ground.

Bathing is a very leisurely process at first, being merely a dipping of the head under water, but soon increases in vigor, being accompanied by much flapping of wings and splashing of water, followed in all instances by preening, whether or not a preliminary preen was undergone before bathing commenced. In only one instance was bathing so vigorous as to carry the bird completely under the surface.

DRINKING.

Drinking takes place but seldom, only two instances having been noted. The bird seen from December 14 to December 28, 1913, was seen to drink twice in rapid succession about 40 minutes after feeding, and another very hungry bird seen March 13, 1914, was correspondingly thirsty, drinking again and again between dives, often several times in succession. Occasionally, however, the bill was merely dipped in the water, the head not being thrown back nor the swallowing reflex taking place afterward. Probably in most cases enough water is taken in with the food.

PREENING.

Preening always takes place after bathing, and occasionally before, as I have said, and also at various intervals throughout the day. The belly feathers are not given the same attention that the other feathers are. In one instance the bird would not preen these feathers until after it had climbed out on a piling, and in another case the bird stood on its tail in the water in the manner cited by Millais. These were the only instances noted, while the feathers of the back and sides undergo a thorough preening continuously.

PERCHING.

While the birds never come out on the shore, keeping strictly to the water, a bit of piling stuck in the bottom of

a lagoon in a slanting direction, with only a portion of the top out of water, was made much use of by one bird to preen and rest. While on the piling, however, the bird was always more or less alert, seeming to realize that it was not altogether in its proper element, and although it would squat down after a while it was never seen to go to sleep, at least it never put its head under its wing, as it did so often in other situations, although the head was often drawn down snugly between the shoulders.

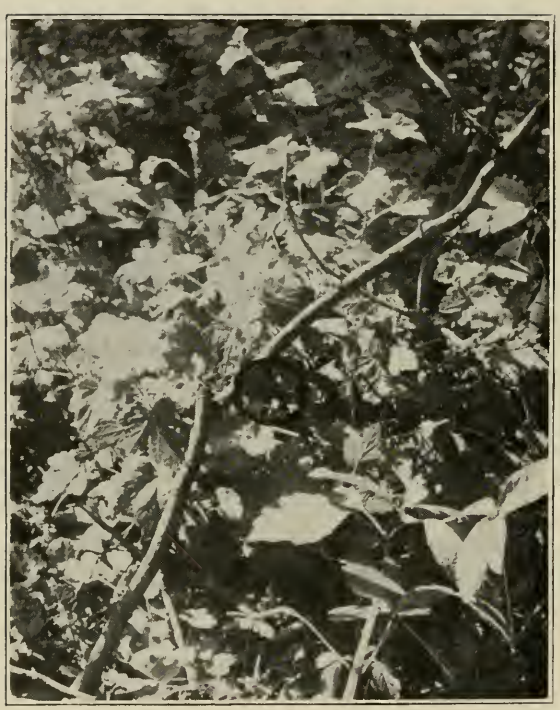
MORTALITY.

My observations on this point agree very closely with those of Mackay, the deaths happening to females and immature males. Along the south shore of Lake Michigan, the Indiana side, I have seen a few dead adult males, but in every instance the bodies were so torn by gulls that the cause of death could not be determined. March 31, 1914, I found an adult male on the beach at Jackson Park, in good condition, but with very little fat. There were no wounds apparent except a bad one on the back, which was probably made by a gull, which bird may have been the cause of the Old-squaw's death, although it does not appear likely. Dead birds have been found in all winters except that of 1912-1913, the mildest of all. But not even in the severest winters have I found a bird that was starved to skin and bones, although besides the adult male just referred to, none of them possessed any fat.

THE KENTUCKY WARBLER IN COLUMBIANA COUNTY.

By H. W. Weisgerber, Salem, Ohio.

I am fully convinced that the Kentucky Warbler is firmly establishing itself along the northern boundry of Columbiana County, for a bird could scarcely appear for three successive years in a given locality and not continue to do so, provided, of course, that conditions remained the same.



SITE OF KENTUCKY WARBLER'S NEST

The nest is on the ground beneath the stick, as indicated by circle

My first experience with the species was on May 5, 1907, which was during the early years of my bird study career. But before going on I wish to relate a rather funny incident with that first observation. It was on a lovely Sunday afternoon and I had gone to the woods—just for a walk and without my opera glasses—not expecting to find anything rare. I found the bird under the thick cover of brush in a low, wet spot in the woods. Across my path lay a large, partly decayed hickory log with a few short stubs of limbs still upon it. The bird was feeding about the earth-bank that still hid the buried roots, and in order to get a better view of it I stepped upon the log and then leaned rather heavily with my left hand upon one of the decayed limbs. Well, suddenly, and without warning, the limb gave way and I found myself astride the log, looking in the opposite direction from where the bird was feeding. As might be expected, the bird flew away and I failed to find him again.

It was in the height of the migration season of 1912 that I again saw him; this time in woodland nearer the city. I listed him several times during the "season," after which I did not visit the woods until fall. I had the same experience with him during the "season" of 1913, and while I suspected a breeding pair, I never found more than one bird—the male for he was in song.

During the 1914 "season" I had a collaborator, Mr. J. F. Machwart, of the high school faculty, whose great desire was to "list" a Kentucky Warbler, and very fortunately he found it on a rainy morning when I was not with him. I listed the bird the next morning and about every other morning during the "season." It was some time after the migration season that Mr. Machwart reported that he had seen a Kentucky Warbler with nesting material in her beak and that she was very much concerned about his presence.

On the afternoon of June 13th I was "hunting" with a camera, and while waiting for a Red-eyed Vireo to return to her nest a pair of Kentucky Warblers were greatly excited. This was the first time that I had ever seen a pair.

After she had disappeared in a brush pile she went to the

TWO YOUNG KENTUCKY WARBLERS IN NEST
Photo by H. W. Weisgerber, Salem, Ohio

nest with food. Then it was found out that I had been sitting within 10 feet of her nest and once during that time she had perched upon the stick above the nest. I did not see it during my first hunt for it. At this time the young birds were only a few days old and squirmed so much that they spoiled the negative of the nest.

I notified Mr. George L. Fordyce, of Youngstown, Ohio, of my find, and on the 18th he and Mr. John L. Young came to Salem and got to see the old and young birds. At this time, too, I obtained the negative of the young in the nest, for they were old enough to remain perfectly quiet.

On the next visit to the place the nest was empty and I trust that the young made a safe getaway. Later I got the nest and brought it home. It is a rather bulky affair composed of dead leaves, the most of which no doubt were on the ground and were simply pushed aside, while the nest proper is composed of wild grapevine bark, grass and rootlets with a lining of very fine rootlets and many horse hairs.

Prof. Wells W. Cooke, of the biological survey, in acknowledging my report says: "You are to be congratulated on finding the nest of the Kentucky warbler. It is a very rare bird in northeastern Ohio. We have probably six or ten records of it at different times and places, but no actual finding of the nest."

And here's a wish that they may continue to come and multiply and spread over adjacent districts so that other observers may list them. And in concluding may I suggest that the casual observer look closely at what he thinks are Maryland yellowthroats that he finds in the thick underbrush of the woodlands, and follow up all "oven-bird" songs that sound the least bit off tune? I verily believe that many observers have missed the Kentucky warbler on the two above suggestions.

SPRING MIGRATION (1914) AT HOUSTON, TEXAS.

BY GEORGE FINLAY SIMMONS.

For several years past, the writer has taken a particular interest in the migratory movements of the more common birds at Houston, Harris County, in southeastern Texas. During the spring migration of 1914, he made semi-weekly one-day trips into the woodlands and fields within a mile or two of the city limits with the special object of ascertaining as near as possible what relation, if any, existed between bird migration at Houston and the sudden changes of weather at that point.

It is to be regretted that trips could not be made each day during that season and the exact dates of arrival and departure ascertained. But the results obtained satisfy the writer that, as Prof. Wells W. Cooke has already stated,[1] local weather conditions on the day of arrival are minor factors in determining the appearance of a species at that place and time, and that the major factors in the problem are the weather conditions far to the southward, where the night's flight began.

The writer does find, however, that local weather conditions greatly affect the dates of departure of our migrants for their more northern summer homes, thus further strengthening the theory set forth in the last clause of the preceding paragraph.

Faunal Position.—Harris County, of which Houston is the county seat, lies well within the semitropic or Gulf strip of the Austroriparian zone of southeastern Texas. Houston lies on Buffalo Bayou in the southeast-central part of the county.

With very few exceptions, the notes were all taken on the south side of Buffalo Bayou, a coastal prairie region with few farms or ranches; the only timber in this section lies in strips from a quarter to a half mile wide along Buffalo and Bray's

[1] Cooke, Wells W. The Relation of Bird Migration to the Weather. Auk, Vol. XXX, April, 1913, pp. 205-221. Cf. first paragraph, p. 205.

Bayous, both of which flow eastward toward Galveston Bay, the latter skirting the city on the south and joining the former a few miles to the east. The remainder of the country is flat, uncultivated prairie, sprinkled with small ponds or grassy marshes.

A line drawn north and south through Houston would be the center of the United States; the city itself is a little south of New Orleans, Louisiana, and St. Augustine, Florida, and more than 200 miles south of California's southern boundary.

The majority of the walks were taken in two directions; the first to the west of the city along the Buffalo Bayou woods, the timber to the right and the prairie to the left, and the second to the south of the city, passing Bray's Bayou and its narrow strips of timber just after leaving Houston, and then across the extensive prairie to Taylor's Ranch, 7½ miles south of Houston.

Weather Conditions.—It would be far too tedious and of no especial value to go into details of the weather conditions, but before the reader can realize the truth of Prof. Cooke's theories as seconded by this paper, he must appreciate the unusual conditions which accompanied the migration.

January was 4.9° warmer than is usual for this month, the mean temperature being 58°, with the lowest at 32° and highest at 79°.

February was 1.4° warmer than is usual, the mean for the month being 53°. Notwithstanding the fact that this condition occurred, on seven days the mercury dropped suddenly to 32°, on the 7th falling to 24°, the coldest day of the whole winter.

On the other hand, March was 4.2° colder than usual, the mercury ranging from 36° to 80°, with a mean of 59°.

The mean temperature for April was 68°, 1.7° below the general average; lowest 38° and highest 86°.

Although the winter was quite dry, the whole of the migration season was unusually rainy, and during the early part of May the region was nearly flooded by the unusually heavy downpours. When one takes into consideration that, though

over 50 miles from the Gulf of Mexico, Houston's altitude is but 53 feet, and that the country is flat and the drainage bad, one can understand how unfavorable to the student of birds were the general weather conditions. For weeks after even the slightest shower water stands in the woodlands and on the prairies, making it almost impossible during the rainy season to leave the graded roads.

The Migration.—Houston lies in the "fly-line" of birds which skirt the western coast of the Gulf of Mexico, following the tropical and semitropical coast regions northward, and proceed up the Mississippi Valley and across the great plains. Furthermore, it catches many of the migrants which reach the United States by flying across the Gulf of Mexico.[2]

Generally during the last week of February migrating Blackbirds, Meadowlarks and Grackles are observed, but this year on account of the unsettled condition of the weather none were noted until the first of March. In fact, only one migrant was noted before March 1, the Purple Martin. It was first observed February 22, but retreated immediately and was not seen again until the return of real spring weather, about March 15.

Though the season was late in commencing, and the weather colder than usual, when it did start it came with a rush, for the greater part of the migrants arrived slightly earlier. The colder weather and excessive rains, especially in the early part of May, seemed to have the effect of detaining for a longer period the birds which summer north of the region under consideration.

Few water birds were noted, for I had not the time to make extensive trips into the wilder sections of the county.

The following list graphically illustrates the migration of 1914 at Houston, the species being arranged according to the order of their arrival from the south:[3]

[2] The only papers on the birds of the region are:
Nehrling, H. List of Birds Observed at Houston, Harris County, Texas, and Vicinity, and in the Counties Montgomery, Galveston and Fort Bend. Bull. Nutt. Orn. Club, Vol. VII, 1882, 3 parts.
Singley, J. A. Notes on the Birds of Galveston Island. Texas Birds, Report of Texas Geol. Survey, Austin, 1893, pp. 355-363.

[3] S. R. denotes summer resident.

Arrival.		*Departure.*
Feb. 22.	Purple Martin	S. R.
March 1.	Sprague's Pipit	March 28
March 14.	Mississippi Kite	S. R.
March 14.	Sycamore Warbler	S. R.
March 15.	Blue-gray Gnatcatcher	S. R.
March 21.	Upland Plover	May 7
March 21.	Swallow-tailed Kite	S. R.
March 21.	Crested Flycatcher	S. R.
March 21.	Black and White Warbler	April 18
March 21.	Western Parula Warbler	May 7
March 21.	Northern Yellow-throat	May 12
March 21.	Wood Thrush	S. R.
March 23.	Scissor-tailed Flycatcher	S. R.
March 24.	Chimney Swift	S. R.
March 26.	Bank Swallow	May 10
March 26.	Rough-winged Swallow	May 7
March 28.	Ruby-throated Hummingbird	S. R.
March 28.	Kingbird	S. R.
March 28.	Yellow-throated Vireo	S. R.
March 28.	White-eyed Vireo	S. R.
March 28.	Cerulean Warbler	April 21
March 28.	Black-throated Green Warbler	May 16
March 28.	Hooded Warbler	May 9
March 28.	Redstart	May 9
March 29.	Florida Red-wing	S. R.
March 29.	Red-eyed Vireo	S. R.
March 30.	Cliff Swallow	May 2
April 4.	Least Bittern	S. R.
April 4.	Swainson's Hawk	April 4
April 4.	Whippoorwill	April 11
April 4.	Summer Tanager	S. R.
April 4.	Prothonotary Warbler	S. R.
April 4.	Orange-crowned Warbler	May 3
April 4.	Yellow-breasted Chat	S. R.
April 5.	Baltimore Oriole	April 11
April 11.	Green Heron	S. R.
April 11.	Solitary Sandpiper	May 16
April 11.	Wood Pewee	S. R.
April 11.	Orchard Oriole	S. R.
April 11.	Painted Bunting	S. R.
April 11.	Scarlet Tanager	May 2
April 11.	Blue-winged Warbler	April 11
April 11.	Nashville Warbler	May 9
April 11.	Kentucky Warbler	May 10

Arrival.			*Departure.*
April	12.	Chuck-will's-widow	S. R.
April	12.	Blue Grosbeak	S. R.
April	12.	Magnolia Warbler	May 16
April	13.	Barn Swallow	S. R.
April	15.	Worm-eating Warbler	April 15
April	18.	Yellow-billed Cuckoo	S. R.
April	18.	Least Flycatcher	May 10
April	18.	Indigo Bunting	May 16
April	18.	Yellow Warbler	May 23
April	18.	Grinnell's Water Thrush	May 9
April	18.	Catbird	May 10
April	18.	Olive-backed Thrush	May 9
April	19.	Florida Nighthawk	S. R.
April	19.	Green-crested Flycatcher	S. R.
April	19.	Dickcissel	S. R.
April	19.	Ovenbird	April 19
April	21.	Virginia Rail	May 2
April	21.	Sora Rail	May 9
April	21.	Black Rail	April 21
April	21.	Blackburnian Warbler	May 2
April	21.	Wilson's Warbler	May 2
April	21.	Willow Thrush	May 9
April	26.	Bobolink	May 2
April	26.	Rose-breasted Grosbeak	April 26
April	26.	Chestnut-sided Warbler	April 26
May	2.	Maryland Yellow-throat	S. R.
May	2.	Canada Warbler	May 9
May	2.	Bay-breasted Warbler	May 2
May	9.	White-rumped Sandpiper	May 10

The following list gives the winter resident species and the dates on which they were last seen:

Short-eared Owl	March 28
Fox Sparrow	March 28
Bewick's Wren	March 28
Short-billed Marsh Wren	March 28
Brown Creeper	March 28
Sparrow Hawk	March 29
Tree Swallow	March 29
White-rumped Shrike	March 30
Sapsucker	April 4
Phoebe	April 4
Red-winged Blackbird	April 4

Golden-crowned Kinglet	April 4
Marsh Hawk	April 11
Slate-colored Junco	April 11
White-breasted Nuthatch	April 11
Hermit Thrush	April 11
Northern Flicker	April 26
White-crowned Sparrow	April 26
Pipit	April 26
Brown Thrasher	April 26
Robin	April 26
Ruby-crowned Kinglet	May 2
Brewer's Blackbird	May 3
White-throated Sparrow	May 3
Towhee	May 3
Lark Bunting	May 3
Myrtle Warbler	May 3
Western House Wren	May 3

REMARKS ON CERTAIN SPECIES OBSERVED.

In the foregoing condensed migration report there are a few species that need explanation. In addition to these, there were species which could not be classified. For that reason this section is added.

Several species subspecifically doubtful have not yet been positively determined. *Hylocichla fuscescens salicicola* might be *H. f. fuscescens* (Veery). It is not certain that *Sitta carolinensis carolinensis* is the form of White-breasted Nuthatch that winters in southeastern Texas, but it is presumedly so. *Geothlypis trichas trichas* occurs as a summer resident, and *G. t. brachidactyla* as a migrant; I watched carefully the summer resident haunts of the bird and noted the day it was first observed there, giving that date as the arrival of *G. t. trichas* and considering all other birds as migrants and belonging to *G. t. brachidactyla*.

1. *Larus franklini.* Franklin's Gull.—April 18 a scattered flock of these Gulls was noted flying high overhead about a half mile west of the city. Eighteen were in sight at one time, some moving northward with slow, easy wing strokes, while others were floating, circling and shifting back and forth. During the course of that day I observed no less than eighty. On the 19th a few more were noted as they passed over the city. None were again seen until May 6, on which

day a flock of some thirty birds passed over the city. A third and last flight was witnessed on May 16, composed of perhaps seventy of these graceful birds.

2. *Branta canadensis hutchinsii.* Hutchin's Goose.—While walking along a shell road just west of the city on April 18, I was extremely surprised to observe a Goose of this species fly up from the prairie about two hundred feet from the road and go flapping off to the south, at no time rising over fifteen feet above the ground. It was probably due to my careless method of observation that I had not observed the bird before it took wing, for the only shelter in the prairie pasture from whence it flew was the scattered growth of "sage-brush" hardly a foot tall.

Both *B. c. canadensis* and *B. c. hutchinsii* occur as migrants and are not uncommon in winter. Small flocks of from ten to thirty birds passed over the city on various dates in March and early April (March 3, 9, 11, 27; April 4).

3. *Grus mexicana.* Sandhill Crane.—On March 10 a flock of about thirty, and on March 18 a flock of eighteen, were noted as they passed northward over the western edge of the city. On April 11 I witnessed a truly astonishing flight. I was observing a number of small Warblers in a patch of tall oaks on the edge of the Buffalo Bayou woods about a mile west of the city limits, when my attention was attracted by strange noises which I could not for the moment locate. And then I discovered the source, a flock of about seventy Sandhill Cranes flying northward about a hundred yards overhead; following this flock at a distance of about three hundred yards came a second and larger flock, numbering perhaps two hundred birds. Yet a third flock followed at some distance, numbering approximately one hundred and twenty birds.

4. *Creciscus jamaicensis.* Black Rail.—On April 21, while beating around in the sedge and tall grass of a tiny marsh about eight miles south of Houston, looking for nests of the Louisiana Clapper Rail, I nearly stepped on a small Rail which I at first took to be an early downy bird of the Clapper variety. However, I soon recognized my mistake and saw that the bird was the rare Black Rail; it ran just ahead of me through the reeds and rushes for quite a distance, easily evading my attempts to lay hands on it, until the edge of the marsh was reached, there taking wing and flying about a hundred yards before dropping into the next marsh.

The only other record for this region is that of Dr. Henry Nehrling, who states that one was taken April 29, 1879.

5. *Gallinago delicata.* Wilson's Snipe.—Common winter resident on the wet prairies and rice fields of the county; they began to move northward about March 1, and were not at all uncommon in suitable localities near the city from then until May 2, when the last two birds were observed. They were most abundant and more distinctly migrating on

April 18, when numbers were observed feeding along a shallow ditch just west of Houston.

6. *Pisobia maculata.* Pectoral Sandpiper.—Quite a rare migrant on the wet prairies and rice fields, but scarce near the city. Between March 7 and May 2, a few were noted feeding along the shallow ditch mentioned above, and a few in small flocks on the wet prairies.

7. *Pisobia fuscicollis.* White-rumped Sandpiper.—May 9 a small flock was noted on a small stretch of prairie just northeast of the city, and the following day (May 10) on visiting the prairie west of the city I observed numerous small flocks. That locality was well within the city limits and but a short distance from the edge of the residence district. Flock after flock passed and repassed me, their white rumps standing out plainly as they wheeled this way and that.

8. *Pisobia minutilla.* Least Sandpiper.—Three were observed April 18, in company with a few Solitary Sandpipers along the small ditch previously mentioned.

9. *Elanoides forficatus.* Swallow-tailed Kite; and

10. *Ictinia misisippiensis.* Mississippi Kite.—These two Kites, though listed as summer residents, should more properly be stated to occur irregularly during summer, for they are both very rare. Whenever noted, the birds were seen singly and sailing rapidly overhead on motionless wings.

11. *Buteo platypterus.* Broad-winged Hawk.—From the few records I have, I can hardly state just how the bird occurs. Generally they are only noted during the spring migration, and then only rarely. This year (1914) one was noted on the edge of the Buffalo Bayou woods west of the city on March 21, and another in about the same locality April 18.

12. *Asio wilsonianus.* Long-eared Owl.—This year I had the pleasure of examining an odoriferous specimen of this bird shot March 19 in the deep woods on Buffalo Bayou a few miles west of the city, and called to my attention two days later by the negro who caused the avicide, though not until the body had been shorn of its wings and consigned to the scrap heap. This is my second record for the region.

13. *Chordeiles virginianus chapmani.* Florida Nighthawk.—The migration of Nighthawks during my five years in the vicinity of Houston has been of particular interest to me because of the regularity of first arrivals. My belief that they arrive each year on the 19th of April has thus far held true, on that day a single bird being seen as it flew high over the city. For the first few days they were only noted by ones and twos. And then on the 24th came a closely packed flock, numbering about thirty birds, which flew low over the city and disappeared to the north. A few days later another such flock was observed. By the last of May the last straggling migrants had passed, leaving only our summer resident birds.

14. *Chaetura pelagica.* Chimney Swift.—My dates for the first

arrivals of Chimney Swifts at Houston for the past four years range from March 26 to 30, averaging March 29. This year (1914) two birds were observed on March 24. The next were noted on the 26th, but the birds did not become common until the 28th; after that they were seen each day, being common summer residents about the city.

15. *Archilochus colubris.* Ruby-throated Hummingbird.—Prof. H. P. Attwater first observed the Hummers in his garden in the city on March 28, but it was not until the 30th that I noted my first. By April 4 they were fairly common and remained so until about May 2, when the migration apparently ceased, leaving a very few birds as rare and irregular summer residents.

16. *Dolichonyx oryzivorus.* Bobolink.—Houston does not fall within the "fly-line" of the Bobolink, but a few are generally noted during each migration. This year two males were noted on the edge of the Buffalo Bayou woods about a mile west of the city on April 26. On May 2, four males and two females were observed on the south side of the city.

17. *Molothrus ater ater.* Cowbird.—During the winter months small flocks are not uncommon on the prairies near the city. About March 30 the last wintering flocks were observed, leaving only the summer resident birds. Whether these summer birds are *M. a. ater* or *M. a. obscurus* (Dwarf Cowbird) has not yet been determined, though I feel sure they are the latter.

18. *Xanthocephalus xanthocephalus.* Yellow-headed Blackbird.—Evidently quite rare in late years, for my only record for the past winter and spring is April 5, when three of these birds were noted in a small marshy spot near Webster, a station some 20 miles from Houston in the southeastern part of the county.

19. *Sturnella magna argutula.* Southern Meadowlark.—In several localities about the city Meadowlarks are not uncommon all winter, and though I have not determined by collecting the birds, I am convinced that they are *S. m. magna, S. m. argutula* and *S. neglecta,* the former probably predominating.

March 1 the first migrating Meadowlarks were noted; during the whole of March flocks of considerable numbers were continually passing northward. By the end of that month the migration dwindled and the last straggling migratory flock was observed on April 4, after which date only the summer resident birds remained. Migrants and summer residents are *S. m. argutula.*

20. *Euphagus carolinus.* Rusty Blackbird.—This migrant Blackbird seems to become more common year by year. First arrivals (1914) noted March 1, after which date they were the most abundant of all the birds. Throughout the month they were migrating northward, and the last were observed April 5. During this period they were abundant in flocks on all prairie lands, especially to the west of the city, where I often

observed large droves following plows in company with the Brewer's Blackbird and two Grackles.

21. *Quiscalus quiscula aeneus.* Bronzed Grackle.—Quite rare in winter, arriving in large numbers with the preceding species on March 1. Throughout March and early April they were migrating through, after which period only the summer residents remained.

22. *Astragalinus tristis tristis.* Goldfinch.—Fairly common migrant and not uncommon in winter; migration apparently commenced about March 15 and ended April 25, when the last birds were noted. During this migration period the birds were not uncommon in and about the shade trees of the city.

23. *Spinus pinus.* Pine Siskin.—Quite a scarce and irregular winter visitor in this locality. None were noted from December, 1913, to March 28, 1914; on that date a flock of twenty was observed in a small patch of woods on the western edge of the city. Later during the day three more were noted. May 9 a few were observed in the woods on Buffalo Bayou about seven miles east of the city, and on May 23 a flock of six was noted.

24. *Pooecetes gramineus gramineus.* Vesper Sparrow.—Abundant migrant and scarce winter resident. Migration commenced March 1, and during the whole of March the birds were abundant in small flocks on the prairies and near the woods on Buffalo Bayou. Last observed April 4.

25. *Passerculus sandwichensis savanna.* Savannah Sparrow.—I was under the impression that both this form and *P. s. alaudinus* occurred in this locality, but a number of skins were sent Mr. Oberholser, and he kindly identified them for me as *P. s. savanna.*

Common migrant. The first were observed April 4, were common during April and were last observed May 2. They were observed in the newly planted shade trees of a prairie suburb on the western edge of the city, and were later (after April 4) observed on the open prairies in flocks of some numbers.

26. *Ammodramus savannarum bimaculatus.* Western Grasshopper Sparrow.—On March 14 Prof. Huxley and myself observed for some time a small Sparrow which we could not at the time identify, but which was later found to be this bird. But it was not until May 17 that I really became acquainted with the birds; that day Mr. I. R. Tannehill, an Ohio ornithologist, kindly accompanied me afield for the particular purpose of ascertaining whether or not the birds occurred near Houston. I felt sure they occurred, but that on account of their inconspicuousness I had overlooked them. Show them to me he did, and it did not take me long to find them common on all weedy prairies near the city, particularly those to the west, where they are summer residents.

27. *Chondestes grammacus strigatus.* Western Lark Sparrow.—Common summer resident; a few winter and in migrations a few are noted in

flocks of Pipits and Vesper Sparrows, feeding among the broom weeds on old plowed fields near the edges of timber. Summer residents arrived March 21, and were apparently settled down and ready for nesting March 28.

28. *Spizella passerina passerina.* Chipping Sparrow.—Scarce winter resident in the vicinity of Houston, and generally observed in clearings and along the edges of timber. Large flocks migrating northward during February and March. Quite rare in April. Last noted May 10.

29. *Spizella pusilla pusilla.* Field Sparrow.—Not uncommon winter resident; small flocks migrating northward during March. Last observed April 18.

30. *Melospiza melodia melodia.* Song Sparrow.—A few winter in thickets near the city, but they are very shy and difficult to observe. Generally during migrations we see large flocks as early as February 1; but this year, on account of the unusual cold of February, none were observed until March 1. During March scattered flocks were migrating, the birds being particularly common from the 8th to the 14th. A few noted on April 11, and the last, a flock of eight, on April 21. During migrations these birds leave their usual haunts and are soon in flocks on the prairies near edges of timber.

31. *Zamelodia ludoviciana.* Rose-breasted Grosbeak.—Two males on April 26 form my only record for this locality. They were in a small pear orchard of a farm several miles west of the city, and on being closely approached took refuge in a nearby thicket.

32. *Hirundo erythrogastra.* Barn Swallow.—This Swallow is listed in the condensed migration report as a summer resident, for the reason that nearly every summer a few are noted. This year they were common and migrating during the latter part of April and early May, but none were seen after May 30.

33. *Stelgidopteryx serripennis.* Rough-winged Swallow.—The last of these Swallows were noted May 7. Though I have heretofore recorded but few during the summer months, I am told by several competent observers that they occur quite regularly and breed in sand banks of Buffalo Bayou and Galveston Bay.

34. *Bombycilla cedrorum.* Cedar Waxwing.—None were observed during the winter and I had feared they were victims of pot hunters, when on March 1 I was surprised to note a flock of about fifty of these birds in the woods on Buffalo Bayou west of Houston. On March 8 Prof. J. S. Huxley and myself observed a flock of thirty-five on Bray's Bayou.

On the 15th of March Mr. W. W. Westgate and myself observed numerous small companies in the cut-over timber lands on White Oak Bayou, north of the city. Generally the birds were to be observed sitting quietly in the topmost branches, their short tails, folded wings and crests giving them a rather conical appearance. Then one would fly and the

rest would straggle after, reminding us of a flock of Bluebirds. Their thin, beady, pulsating notes (*pee-ee-ee-ee-ee*, reminding one of the screeching of a bearing that needs a visit of the oil-can) were almost continually heard while we were in that locality.

During the last of March a few more were observed, and a few during April, but rarely. Last observed May 9.

35. *Nannus hiemalis hiemalis.* Winter Wren.—On March 28, while wandering through the woodlands on Buffalo Bayou about a mile west of the city, I observed a single bird of this species in a tangled brush heap in a mixed portion of the woods where there was much underbrush. Though I watched it for some time, the bird was not heard to utter a sound.

On visiting the locality April 4 I again observed the bird, or another of the same species, and remained for some time to observe it. Finally it left the brush heap and crept out on an old pine log nearby, and, much to my surprise, sang a very pretty little song, reminding me of the song of the Ruby-crowned Kinglet, though not of such a warbling nature, containing more trills and tinkling notes.

36. *Polioptila caerulea caerulea.* Blue-gray Gnatcatcher.—To me the 1914 migration of Gnatcatchers was little short of wonderful. Heretofore they have been quite scarce, even during migrations, and were always observed in the tallest forest trees. This season they were especially abundant.

On March 15, while in the cut-over timber on White Oak Bayou, northwest of the city, Mr. Westgate and myself observed the first Gnatcatcher of the season. We were watching a number of Myrtle Warblers feeding, when near at hand we heard a familiar twanging note, very thin and purring, sounding like the *sping* of a .22 rifle. We soon located the bird, a male, in the branches of an oak near at hand.

That afternoon five males and two females were observed.

On March 21 I walked westward from the city along the edge of the timber which borders Buffalo Bayou on the south. Gnatcatchers were everywhere, attracting attention by their peculiar call note. Anywhere and everywhere I observed them: in the deepest parts of the woods, on the lower branches of trees, on the edges of clearings and woods, and even on the ground. Numbers were observed on the barbed wires of the fences along the country road. They were not at all shy, frequently allowing me to approach within two or three feet of them. On one occasion in a small clearing in the timber I was watching a Downy Woodpecker tapping on a dead bough in a pile of brushwood on the ground, when a pair of Gnatcatchers lit on the brush, hopped actively about and lit on the ground. As they moved along on *terra firma* they looked for the world like a pair of miniature Mockingbirds, their long tails and general color strengthening that impression.

In the distance of less than two miles along the old road I observed

one hundred and ten of the birds, always singly or in pairs. They were never seen away from timber.

A few more were noted during the latter part of the month, but by the end of March the migration had apparently ceased, leaving only a few, a very few birds as summer residents.

37. *Planesticus migratorius migratorius.* Robin.—A few winter with us, but they are becoming scarcer year by year (*via* pots). Frequent the woodlands along the bayous, where they are very shy. On March 1 a flock of some seventy-five was observed just west of the city, by far the largest flock I have noted in years. Then a few on the 21st and 28th of March and the 4th of April; and on April 26th the last, two lone birds, were observed.

THE PINE SISKIN BREEDING IN IOWA.

BY W. J. HAYWARD AND T. C. STEPHENS.*

I.

The joy of seeing and identifying a new bird is exciting and satisfying, but to find a pair of migratory birds building a nest in a tree in your front yard, when to the best of your knowledge the rest of the species were busy with this operation in the pine forests 500 or 1,000 miles to the north of us, is more exciting and more interesting. When my young neighbor, Ralph Whitmer, called my attention to a nest Monday, April 13, 1914, in a pine tree 15 feet from his father's front porch, I knew something unusual had happened in bird land.

In late February and early March a new bird song more musical than the Blue Bird's contralto carol and more inspiring than the Robin's "cheerily, cheerily," had come to me on the frosty morning air. It was a new song to me, as it not only had in it the freshness of the first south wind of spring, but the tenderness and sympathy of the summer bird songs as well. A half hour of quiet study with field glass and bird guide convinced me that my first harbinger of spring was the Pine Siskin (*Spinus pinus*). A flock of twenty-five or

* Part I by Mr. Hayward, Part II by Mr. Stephens.

NEST OF PINE SISKIN, SIOUX CITY, IOWA

thirty of these small migrants greeted me for a week or ten days each morning as I stood waiting for my car. They were between 4½ and 5 inches in length. The bird might easily be mistaken for the Goldfinch dressed in his winter suit, as its flight is very much like the Goldfinch. But the difference in the song makes the identification comparatively easy. When my young friend visited me the evening of April 13 and told me of the nest, I asked him what the birds looked like and he said "summer canaries." In answer to my question regarding their feeding habits, he replied that they seemed to eat "pine cones." Having my interest thus aroused, I went with him to the Colorado Blue spruce (*Picea pugens*) tree in the yard and near the end of a limb about nine feet from the ground was the nest. Getting a box upon which to stand, I could look over into the nest and see the bird. I had no difficulty in satisfying myself that it was the same bird that had so gloriously entertained me two or three weeks previously. I approached the nest with my hand, pulling aside the branches, and my hand was within six inches of the nest before the young housekeeper hopped to a branch no more than three inches the other side of her artistic home. This lack of fear seemed to be a characteristic of the bird, as she would remain on the nest when approached, no matter how often, but, when flushed, would return very promptly after the intruder withdrew. When the nest was first discovered April 13 it contained three eggs. These were greenish white, speckled with reddish brown. My young friend placed a basin of fresh water under the tree, which both male and female used as a bath tub and drinking fountain. But they were not tempted by the tray of bread crumbs that was invitingly placed by the basin of water, seemingly satisfied with the bill of fare furnished by the seeds of old and young pine cones on the tree. Only one of the eggs hatched, but this one bird was tenderly reared and was seen no more after May 5. Presumably it left with its fond parents for the far North on that date and is now being shown off to admiring relatives as an example as to just what the delightful spring air of Northwest Iowa can do for young Pine Siskins.

Just a word about the construction of this unusual nest. It was of the modern bungalow type. The foundation was rather loosely saddled on a pine bough about 15 inches from its tip, and consisted of dead pine twigs and pieces of dead weeds, grass, pieces of cord and roots were woven in to bind the foundation more securely. Placed rather loosely upon this was the real living apartment. This was made of finer roots, horse hair, and cotton. It was round like the nest of the Goldfinch, but only one-half as deep. The peculiarity of this nest was the lack of connection between the upper part of the nest and the lower.

On account of the rainy weather and the overhanging branches of the tree, it was impossible to see what kind of food was fed the young. This we regret very much. We both are hoping, however, that this pair of Siskins found Iowa such a hospitable state that they will want to build and breed here next year, and then we will endeavor to see just what kind of baby food they recommend.

II.

No Pine Siskins had been observed all winter (1913-14), by the present writer, until March 2, when four were seen up the Big Sioux river, feeding on the seeds of the common sunflower (*Helianthus annuus* L).

They were next noted on March 16 on the college campus. On this date a good sized flock was observed in the pine trees. It was observed that on this date the pine cones were opening, thus making the seeds accessible; and upon these the Siskins were feeding. Where had they been all winter, and how did they manage to reach this spot on the very day the pine cones opened?

From this time on, until the third week in May, they could be seen daily in small flocks of from three or four to a dozen. On April 20 thirty-one were counted in one flock, and on the 23d this same flock had increased to more than fifty individuals. This large flock was seen almost daily for about two weeks; but after May 4 only scattered individuals were noted, the last record being May 21.

Mr. Hayward was kind enough to take me to see the Pine Siskin's nest on April 14, and at that time I verified his account of the behavior of the parent bird on the nest, as given above, as well as his identification of the species. It was not necessary to kill the bird to determine its identity.

After the brood had departed he very kindly turned the vacated nest over to me for examination. A fuller description of it may be desirable, since but few have had the privilege of personal examination of the nest of this species.

In the available literature I am able to find a specific account of the finding of only five nests (counting once the report of several nests by Simpson, noted below).

Anderson, in *The Birds of Iowa*, makes no suggestion that the species may breed in the state.

Kumlien & Hollister simply quote other observers who affirm a belief that it may breed in Wisconsin. Cory adds no information on this point.

Hatch leaves one to infer that he had definite knowledge of the breeding of this species in northern Minnesota, but he is vague on this point.

Barrows points to evidence that they were breeding in Michigan, but states that no nest has been found. Davie says they breed in Michigan.

Wheaton thinks they may breed in northern Ohio, but Dawson says this is still undetermined. Bruner, Wolcott, and Swenk think it may breed in the pine forest region of northwestern Nebraska.

Allen [1] refers to a nest having been found at Cambridge, Mass., in May, 1859, but I have not been able to locate the original account.

Fisher [2] records the finding of a Siskin's nest at Sing Sing, N. Y., on May 25, 1883, which contained four eggs. This nest was located in the top of the tree, twenty-four feet from the ground. It measured 8 cm. (outside) by 5 cm. (depth).

Allen [3] gives a rather full account of the finding of a breeding pair of Pine Siskins in Orange county, N. Y., in the spring

[1] Auk, IV, p. 286.
[2] Bull. Nutt. Orn. Club, VIII, p. 180.
[3] Auk, IV, p. 284.

of 1887. A nest which he found in process of construction on May 3 was later deserted. This one was only eight or ten feet from the ground. However, by May 12 another nest had been constructed, and contained four eggs. This nest was also in a Norway pine, but about thirty-five feet high. This writer also mentions the tameness of the sitting bird.

Ralph and Bagg [4] record the breeding of the Pine Siskin at Remsen, N. Y., April 4-9, 1889.

R. B. Simpson [5] records the finding of ten nests of this species in the hemlock forests and in the mountains of Warren county, Pennsylvania, during the spring of 1912. These nests varied in height from 10 to 30 feet from the ground. The first one was found on April 14; the others on through the month of April.

One other record, which, however, is over the Canadian line, is described by C. H. Morrell [6] as being found on March 29, 1898, in Nova Scotia. This author describes the nest somewhat fully, and also mentions the bird's lack of fear.

The nest referred to in Mr. Hayward's paper possessed the following dimensions, although, it should be noted, the measurements were taken after the nest had been abandoned and was in a more or less dilapidated condition. Outside diameter, 90 mm.; inside diameter, 45 mm.; outside depth, 50 mm.; inside depth, 10 mm.

As Mr. Hayward says, the upper part, or superstructure, was very loosely laid upon the foundation; this, probably, is not a general characteristic.

The foundation of the nest was rather loosely constructed of coarse pine twigs, which were interwoven with string and some silk thread. Numerous broken bits of roots and stems (including stems of the tumble weed, *Salsola kali* var. *tenuifolia*) were used. The superstructure was composed of bits of much finer roots and stems, intermingled with a great deal of some sort of wool and human hair. More might be said of this latter component, because of its rather unique occurrence. The amount of this material was considerable. Short

[4] Trans. Oneida Hist. Soc., XII, 1912, pp. 16-85.
[5] Oologist, XXIX, p. 372.
[6] Auk, XVI, 1899, p. 252.

strands (40-60 mm.) of rather coarse gray hair, and longer strands (150-200 mm.) of somewhat finer auburn hair, seemed to indicate two sources of material. There were a very few still coarser black hairs, which may have been horse hairs.

The presence of this material in the Pine Siskin's nest is of interest and significance. This bird is accustomed to nest in localities where such material is probably not available. We find here, then, an instance of its ability and readiness to adapt itself to new surroundings and conditions of environment.

This pair of birds was evidently overtaken with the breeding instinct before the bulk of the species had moved northward from this locality. Finding a suitable site in the spruce trees, no doubt accentuated the developing instinct. Construction was begun, and a foundation of the normal type was built from the pine twigs. Then in searching for the softer material in the immediate vicinity, which included a human habitation, they came across a supply of human hair, which they were able to recognize as suitable for their purpose.

There are, in this instance, two noteworthy facts. The establishment of a record of the breeding of the Pine Siskin in the state of Iowa; and the interesting modifiability of habit in response to external conditions.

Sioux City, Iowa.

THE WILSON BULLETIN

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Official Organ of the Wilson Ornithological Club.

Edited by LYNDS JONES.

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EDITORIAL

Remember the second annual meeting of the Wilson Ornithological Club, which will be held in Chicago, Illinois, on December 29 and 30, 1914. The first opportunity for a gathering of ornithologists in the central part of the United States was presented at the 1890 American Association for the Advancement of Science held at Indianapolis. The writer attended that meeting, where he met Mr. O. Widmann, Dr. B. W. Evermann, Dr. A. W. Butler, Dr. Morris Gibbs and others. The next opportunity was offered in February, 1914, at Chicago, when we met last spring. We ought to make this third opportunity count big by planning now to attend.

—o—

In anticipation of the Chicago meeting, plan to present a paper. Send the title to the chairman of the program committee, Lynds Jones, Oberlin, Ohio, not later than December 1, but as soon as you can. Plan to place these papers in the hands of the editor for publication in the Wilson Bulletin, to be published after the meeting.

There are large numbers of ornithologists throughout the central districts of the United States who are not now affiliated with any organization but who ought to be for their own sakes. Such persons would probably be glad to join our Club if its existence and aims were made known to them. Be a missionary and help all such known to you to find themselves among our number this year.

———————o———————

There are too few short field notes. As the Wilson Bulletin grows this lack ought to be supplied. It is an easy matter to write up a short account of some happening worth recording, as compared with preparing an article of some length. If written at the time of the happening, in first draft form or in permanent form, the thing is done. Try it.

———————o———————

We regret to have to say that on account of the Pan-European war Rev. W. F. Henninger's work on the Ne-arctic Ornis will be indefinitely postponed. The first part was about ready for mailing when the war began. Mr. Henninger has our sincere sympathy in this bitter disappointment.

———————o———————

TO MEMBERS OF THE WILSON ORNITHOLOGICAL CLUB:

The next meeting of the Club will be held in Chicago on Tuesday and Wednesday, December 29th and 30th. It is probably not possible to select a date suitable to every one, but we have done the best we could do, taking all things into account.

Now, we hope this will be a great meeting, and things even now point to a large attendance. Last spring we had a very good meeting, without very long notice in advance. This year the notice is ample, and we hope that every one will plan to attend who possibly can do so.

In the meantime cannot each member do a little toward strengthening our membership? It is our hope to greatly increase our membership before the next meeting. Will each member try to secure at least one or two new members, and send to the officers the names of others who may be solicited?

We need a larger membership in order to publish a larger Bulletin. Coöperation at this time will mean a great deal to the future of the Club.

Sincerely yours,

T. C. STEPHENS.

FIELD NOTES

An Experience With a Florida Gallinule.

On or about the twelfth of last May I heard of a strange bird that was in a certain grocery store window. Being naturally curious I thought I would stop in and see it. The grocer was not acquainted with the bird and was not able to find any more definite name for it than that it was a green legged snipe. I myself had never seen a gallinule but I knew at first glance that it belonged to the same family as the coot, which bird I was quite familiar with in some of his northern Iowa breeding grounds.

I got out my Chapmans and Reed's and easily placed him with his proper name. This incident occurred in Des Moines, Ia. The breeding ground of the gallinule is in Minnesota and the Dakotas. This particular species, the Florida gallinule, is never found in this territory except on its yearly migrations.

The bird was found tangled up in some barb wire fence about a mile from a river in a more or less populated portion of the city. My assumption is that the bird in flying strayed a little lower than its comrades and thus met its fate. It had the characteristic slate color of the family, the legs were a bright green with a reddish tinge on the upper part of the femur, the bill and nose plate were red, except for about one-half an inch of yellow on the tip of the bill. This latter point or characteristic was probably an anomaly. This is true of the Purple gallinule but not of the Florida. The serrated edging of white along the lower margin of the wings, together with the reddish upper femur, distinguished it as the Florida rather than the Purple, which it so closely resembles. I have found these differences and variations in the color of the mandibles of water birds to be quite common.

The fact that these birds fly at night, and being as they are by nature weak flyers, probably accounts for the strange situation in which he was found.

I paid the sum of fifty cents for the bird, took it to the zoology department at Drake University, where we caged it and kept it under observation while it recovered from its unusual experience.

At first he was very tame and made no fuss at being handled, but soon he became restless and it became a problem what to do with his Floridaship. The bird thrived on angle worms but ate cracked corn when there was nothing better.

When school closed the tenth of June, I carried him in a yeast foam box a distance of about two hundred miles north to the Iowa City Lakeside Laboratory at Lake Okoboji. Here I tethered him out on the shore by a string about twenty feet long. He seemed quite content with his

lot and spent his time feeding amongst the seaweed and drift on the water's edge. There were a number of Scaup ducks nesting in the vicinity who manifested considerable curiosity and decoyed to within a few yards of a number of us who were working on the shore. They seemed not to understand why their friend was so reckless. At night I often found them together.

And now I come to the end of my gallinule's experience. One night a strong wind came up from the northwest, the little box that had served as a shelter was blown away and the next morning I found him beating against the shore dead. I examined his wing and found one of the wing tips to have been injured in a way that would have left him unable to ever again fly for any distance.

I have since found this summer that the gallinule nests here in northern Iowa, and after watching the flight of the bird I figured that the accident to the bird was a very natural one. Their flight while rapid is very low, especially is this true when flying over water.

Milford, Ia. ARTHUR F. SMITH.

MINIATURE EARTHQUAKE.

A few days ago, while cutting the upper limbs off a large burr oak tree, we barely missed wrecking a whole family of wrens. On one of the lower branches was a small bird house, in which a pair of wrens were nesting. They seemed not to mind the noise of a couple of saws grinding away above them but went on, totally oblivious of noise, feeding the young and taking turns singing from the roof of their little domicile.

All went well until an accident occurred, as accidents so often do. The branch that we had figured on falling a certain way naturally fell the other way; the bird house was heaved from its bearings, spun through the air some twenty feet, coming to the ground with a thud.

I ran over to it, lifted the bottom off, pulled out the twigs which formed the nest, being careful not to spoil the pocket of the nest. There were six young, barely a week old; they were not active enough to tell whether they had been injured or not. The old bird who was with them acted as though she had taken her last flight and was ready to give up the fort. When she saw the crowd around her she essayed to fly, but her head was evidently still whirling in such a way that she could not balance. I placed her back on the nest, put the nest back in the house and put the house on a porch roof some thirty feet away at about the same height from the ground.

The mate to the injured one soon came back with a grub in its mouth, hopped all around the old nest site for some five minutes, then suddenly he recognized the house, which, by the way, he was within three feet of several times, for in his excited flying he would land on the edge of the porch where he had been accustomed without seeing anything, but sitting at the old nest site he recognized his old home and without further

adieu he flew across, went straight up to the house and walked in. A few minutes and the two old birds came out and calmly went for either food for the young or perhaps herbs to cure seasickness.

Several days have elapsed and the birds still continue to take regular trips with food. We are of the opinion that the wren family has not been wiped out through its fifteen-foot flight on the perpendicular.

Milford, Ia. ARTHUR F. SMITH.

BAY POINT, OHIO, MIGRATION NOTES. 1914.

Bay Point is a low, sandy bar, extending a mile and a half toward the city of Sandusky from the southeastern corner of the Peninsula upon which Lakeside and Marblehead are built. It is in the direct line of the southward migrations of the birds which cross lake Erie by the Point Pelee, Pelee Island, Middle Island, Kelleys Island, and Marblehead Peninsula route. The waters, or shores, of Sandusky Bay and the Sandusky River, which flows into the bay, continue the route southward.

The seven weeks between June 26 and August 14, 1914, were spent within easy access to this point, and daily studies of the birds found there were made. Frequent visits were also made to it during July, 1913.

In 1913 the first migration noted was on July 11th, when Least Sandpipers, Semipalmated Sandpipers, Yellowlegs and Semipalmated Plovers were found on the beach. On the 12th a cloud of Bank Swallows passed over the Point on their way southward. The great majority of them came directly from the direction of Marblehead Lighthouse and passed up the bay along the western shore. In 1914 the first migrants appeared on June 29—a Black-bellied Plover in full dress. When he was flushed, he flew up the bay. On July 3rd there were three Least Sandpipers on the beach. They were next noted on the 9th, and nearly every day until our departure—August 14. Three Semipalmated Plovers arrived on July 3, with three Baird's Sandpipers, and were regular feeders there during our stay, occasionally increased in numbers up to a dozen of each species. A Dowitcher came to the beach on July 14, in the afternoon, and was seen there on the 15th, 22d, 23d and 24th. The first Caspian Terns came on July 17, and were there every day afterward. There were three at first, but they gradually increased to the maximum of 16 on August 25, when a brief visit was made to the Point. The first Semipalmated Sandpipers came on July 16, the Yellowlegs on the 22d, the first Pectoral Sandpipers on the 24th, and the first Solitary on the 24th.

On July 17 a Stilt Sandpiper visited the Point. A capture was not made, but the bird was feeding in a shallow lagoon just outside the line of vegetation which bordered the bare sand beach, and permitted an approach within three rods. There was no mistaking the barred under-parts, the long slender legs, and the habits which I had carefully studied in Iowa in the summer of 1913. The bird was with Spotted Sandpipers and Piping Plovers.

It was clear that Bay Point is the favorite gathering place of the Caspian Terns, and that the few individuals which have hitherto been seen in the vicinity of Cedar Point and the east Sandusky marshes were birds that had wandered from here. Taken all in all, Bay Point is a far more favorable place to observe the southward migrations than Cedar Point.

LYNDS JONES.

THE GOLDEN WINGED WARBLER IN CENTRAL IOWA.

In Anderson's "Birds of Iowa" practically all of the records of this species are from the eastern part of the state. To these I would like to add two records for central Iowa. Both of these were made in Marshall County along the Iowa River. The first record was May 24, 1913, when an adult male was taken out of a dense hawthorne and wild crab thicket. I caught just a glimpse of him and then hunted for more than an hour before I finally succeeded in securing it.

The other record was on May 11, 12, and 13, 1914. The 11th and 12th were cloudy and cold following warm weather. One male Golden-wing was found about a small sheltered spring during these three days. He could be found almost any time during the day and was never more than a few yards away. It was presumably the same bird, as it was always found in company of two Chestnut-sided Warblers.

IRA N. GABRIELSON.

A WREN INCIDENT.

On Saturday, May 16, a couple of my friends went on an over Sunday camping trip up the Iowa River. They pitched their tent, and in disposing of their coats hung one of them on a small thorn apple tree. Sunday a wren appeared and seemed to be quite fascinated by the possibilities of that coat. My friends placed a few bread crumbs on the coat sleeve and the bird soon found them. A little later it commenced to investigate the pockets and scrambled about through all of them, including a large game pocket.

It finally decided on the pocket to be preferred as a nesting site and commenced to clean out. This pocket happened to contain cartridges for a 22-caliber rifle and the wren was seen to carry thirty-nine of them out of it. Some of them were simply pushed out over the edge of the pocket while others were carried some distance from the coat before being dropped into the grass. The bird worked industriously until every cartridge was out of the pocket and then, after scratching around vigorously, proceeded to carry sticks and straw into the pocket and built a nest.

Unfortunately operations had to be suspended at this point, as the coat was needed for the return trip to town.

IRA N. GABRIELSON.

REVIEWS OF PUBLICATIONS

THE BIRDS OF NORTH AND MIDDLE AMERICA.

Part VI. By Robert Ridgway.

The sixth part of this monumental work comprises the Picariae with the families Picidae (152 forms), Capitonidae (4 forms), Ramphastidae (14 forms), Galbulidae (3 forms), Bucconidae (13 forms), the Anisodactylae with the families Alcedinidae (10 forms), Todidae (6 forms), Momotidae (20 forms), Caprimulgidae (39 forms), Nyctibiidae (5 forms) and the Striges with the families Tytonidae (9 forms) and Bubonidae (94 forms). Quite a number of new forms are here given for the first time and many critical remarks on already diagnosed forms are made. For instance in regard to the further subdivision of the genus Centurus among the Picidae. When it is stated that the forms of *Dryobates villosus* and *pubescens*, of *Colaptes auratus* of *Phlæotomus pileatus* show a gradual increase in size from Florida northward without any material change in coloration one is inclined to ask has the naming of all these forms a practical value besides the mere scientific value? A great deal depends of course upon the point of view in such cases, but when it comes to being a science for science's sake only, when the scientific and the practical are thus separated we are inclined to ask, "cui bono?" On the other hand, some of these problems must be solved along these lines, and no man is better able to solve them than Professor Ridgway, the distinguished author of this work. It is interesting, too, to notice the different views, which for instance Professor Ridgway and Dr. A. Reichenow, express in their respective works about such a family as the Striges. Space forbids us to enter upon any details, but a careful study of both authors will show that either view has some points in its favor, and that Dr. Reichenow's ideas cannot be disposed of with a few remarks, as was done in the review of his work in the Auk some time ago, which only showed and proved that the reviewer had not in the least understood the fundamental principle of Dr. Reichenow's classification, and in his ignorance of the case had simply squelched its merits. *Cryptoglaux acadicus scotaeus* is considered an individual variation of *acadicus* proper, and *Otus flammeolus idahoensis* is referred to *flammeolus*, and *Otus xantusi* is made a subspecies of *asio*, and we think in every case that Mr. Ridgway is correct. The same principle will perhaps apply to *Glaucidium gnoma hoskinsii*, which applies to *Cryptoglaux acadicus scotaeus*. Altogether Mr. Ridgway is to be congratulated upon the completion of this volume, and we hope that the other parts will speedily follow. W. F. H.

THE BIRDS OF VIRGINIA.

By Harold H. Bailey.

This neat and attractive volume of 362 pages treats of the breeding birds of the great state of Virginia, practically all of which have been hunted up and critically recorded by the author and his father. One hundred and eight generally good halftones from various sources accompany the text, as also fourteen full page colored plates by Mr. Earl L. Poole, of Philadelphia. We have seen some of the original paintings of this young artist and do not hesitate to declare that they are both highly artistic and scientifically correct, and absolutely equal to the best which have been produced in this country, and we have seen the paintings of them all. The text is carefully written and shows that Mr. Bailey, who is an ardent Oölogist, has put his knowledge acquired in watching the nesting habits of the birds to good use, and is a splendid protector of the feathered tribe, as every true Oölogist should be. We regret that he has not added a short list of all the birds recorded in the state, and that he has not used the metric system in giving measurements of eggs. We can highly recommend this pleasing volume to all who love to read about and study the birds in their haunts. W. F. H.

A Monograph of the Genus Chordeiles Swainson, Type of a new Family of Goatsuckers. By Harry C. Oberholser. U. S. National Museum Bulletin 86. 1914.

The author seems to have made out a good case for the addition of a new family to North American birds. He has evidently gone into the subject deeply and spared no pains to prove his case. The same seems to hold for the erection of a new genus to separate the Whippoorwills from the Chuck-wills-widow group. The paper is thorough in treatment and is nearly the last word as related to the Goatsuckers. There are still a few forms whose winter distribution is not known. L. J.

A Distributional List of the Birds of Arizona. By Harry S. Swarth. Pacific Coast Avifauna No. 10. Published by the Cooper Ornithological Club, May 25, 1914.

There are here included 362 species and subspecies, grouped as 152 resident, 72 summer visitant, 57 winter visitant, 30 transient, 51 of casual occurrence, and a hypothetical list of 24. The large number of resident species is explained as due to the fact that many species which are truly migratory merely migrate from a higher to a lower altitude but do not leave the state. A colored map of the state is a great help. The paper closes with lists of species grouped according to faunal regions, and with a voluminous bibliography. This contribution is in every way the equal of other numbers of this valuable series of papers. L. J.

The Birds of El Paso County, Colorado. I and II. By Charles E. H. Aiken and Edward R. Warren. Colorado College Publications, General Series Nos. 74, 75, 76. May, June-September, 1914.

The life zones included in this county are Upper Sonoran, Transition, Canadian, Hudsonian, and Arctic-Alpine. Lists of the birds which are peculiar to these several zones are given. A history of the work done in the county is given, the climate is described, and the altitudes given. The birds are divided according to occurrence as resident throughout the year, 46 species; summer residents, 84 species; breeding birds which occasionally winter, 7 species; non-breeding birds which winter, 28 species; non-breeding birds which pass through in migration, 52 species; non-breeding birds of occasional occurrence, 51 species; exterminated species, 3; introduced species, 4, making a grand total of 275 species. There are many good halftone pictures from photographs, and in the treatment of the species in the body of the paper the annotations are interesting and valuable. This paper is a distinct contribution to local ornithology. L. J.

The Birds of Waukesha County, Wisconsin. By Alvin R. Cahn. Bulletin of the Wisconsin Natural History Society, Vol. XI (New Series), No. 4, December, 1913. Pages 113-149.

A good map of the county makes clear the great number of lakes which it contains, and the large amount of swampy area. It would have helped to have also indicated the tamarack areas. A description of the topography of the county and an account of the work done upon which the list is based, with acknowledgements, is followed by the annotated list of 202 species, 8 of which are given as hypothetical. There are 15 Residents, 7 Winter residents, 69 Summer residents, 79 Migrants, 11 Migrant and summer residents, 7 Migrants and winter residents, and 6 Rare visitants. These various groups are given in separate lists in a recapitulation at the close of the paper. The author has evidently taken pains to make certain of the identification of each species before giving it place. In this he is to be commended. There are four good halftone plates from photographs, each plate containing two pictures. Probably the author is not responsible for the capitalization of the part of the compound words which follows the hyphen. This is consistently done throughout the paper. We are glad to have this faunal local list.

L. J.

The Red-winged Blackbird: A Study in the Ecology of a Cat-tail Marsh. By Arthur A. Allen. From Abstracts of Proceedings, Linnaean Society of New York. Nos. 24-25, 1911-13. Pages 41-128.

We have seen few papers which can compare with this one in thoroughness of the work done, interpretation of the facts gathered, arrangement of the material, selection, and makeup. The numerous halftones from photographs are not only uniformly good, but they tell something

worth recording. It is not possible to begin to do justice to this paper in the space at our disposal. Everybody who is at all interested in the side of bird study illustrated by this paper ought to possess a copy. We hope that there are plenty of them to be had. L. J.

On the Habits and Behavior of the Herring Gull, Larus argentatus Pont. By R. M. Strong. From "The Auk," Vol. XXXI, January and April, 1914. Pp. 23-49, 178-199.

This paper is based on studies carried on among the breeding colonies of these gulls upon the islands in Green Bay, Wisconsin. The limits of this review preclude anything like an adequate treatment of this excellent paper. The field studies are supplemented by painstaking investigations in the laboratories of the University of Chicago. The pictures —halftones from photographs—are carefully chosen and each one has its peculiar contribution to make to the paper. There is little left to be desired in the field which this paper covers. If a similar study of the winter habits of these gulls could be as carefully done we should then know about all of the life history. L. J.

PUBLICATIONS RECEIVED.

A Further Study of the Home Life of the Brown Thrasher—Toxostoma rufum Linn. By Ira N. Gabrielson. From the Proceedings of the Iowa Academy of Science for 1913. Pp. 299-304.

A Heronry near Indianapolis. Pp. 57-58.

Further notes on Indiana Birds. Pp. 59-65.

Birds that Destroy Grapes. Pp. 53-55.

All by Amos W. Butler. From Proc. U. S. Nat. Mus., Vol. 43.

Use and Value of Wild Birds to Texas Farmers and Stockmen and Fruit and Truck Growers. Compiled by H. P. Attwater. 1914. Texas Department of Agriculture Bulletin. May-June, 1914. No. 37.

Birds in Relation to the Alfalfa Weevil. By E. R. Kalmbach, Assistant Biologist. Bulletin of the U. S. Dept. of Agri. No. 107.

The Ontogeny of the White Ibis; Specialization of Tail Down in Ducks; Effect of Postponed Moult in Certain Passerine Birds; Preliminary Pheasant Studies. By C. William Beebe, Curator of Birds. Zoological Scientific Contributions of the New York Zoological Society, Vol. 1, Nos. 12-15.

The Extermination of America's Bird Fauna. By R. W. Shufeldt. Separataftryk Af, "Nyt Magazin for Naturvidenskaberne." Christiania. 1914.

Osteology of the Passenger Pigeon (Ectopistes migratorius). By R. W. Shufeldt. From "The Auk," Vol. XXXI, No. 3, July, 1914. Pp. 358-362.

Notes on the Louisiana Clapper Rail (Rallus crepitans saturatus) in Texas. By George Finlay Simmons. From "The Auk," Vol. XXXI, No. 3, July, 1914. Pp. 363-384.

ORNITHOLOGICAL JOURNALS RECEIVED.

The Auk, Vol. XXXI, April and July, 1914.
Bird-Lore, Vol. XVI, Nos. 2, 3, 4. 1914.
Bluebird, Vol. VI, Nos. 10 and 11. 1914.
The Condor, Vol. XVI, Nos. 2, 3, 4. 1914.
The Oregon Sportsman, Vol. II, Nos. 4, 5, 6, 7. 1914.
The Oriole, Vol. II, Nos. 1, 2. 1914.
The Taxidermist, Vol. 2, No. U. 1914.
Our Feathered Friends, Vol. I, No. 4. 1914.

CORRESPONDENCE

A REJOINDER.

By T. C. Stephens.

There appears in a recent number of the Auk* a criticism by W. L. M. of some work which has appeared from time to time by students of the Macbride (Iowa) Lakeside Laboratory. Inasmuch as the present writer is largely responsible for this work, and inasmuch as similar work may appear in the future, it becomes a duty to ascertain to what extent the criticisms are grounded.

The criticism is directed wholly at such parts of the work as relate to the food of nestling birds, a field which seems to be guarded zealously by the critic as the peculiar domain of the Biological Survey.

Let us examine specifically some of the objections raised. He charges the workers with "over-enthusiasm" (a statement rather too vague to detain us), and goes on to say that it is a grievous fault "to publish identifications that could not possibly have been made under the circumstances."

Truly, this is a bold and sweeping accusation. Upon what does our rash reviewer base his confidence? W. L. M. further says, "Now the positive identification of a mosquito, and the distinguishing of the house and stable flies, two obscurely marked species of the same family, require far closer and more definite observation than could possibly be made on specimens in process of being fed to nestling birds."

This criticism is directed at Gabrielson's work on the catbird (Wils. Bull., XXV, Dec., 1913, pp. 179-180), where, in Table III, 99 "Flies" were recorded as being fed to the young over a period of ten days; and in which the text says "The flies were mostly fish flies, though house and stable flies were also noted."

* The Auk, XXXI, July, 1914, pp. 420-421. "W. L. M." presumably stands for W. L. McAtee, of the Biological Survey, but inasmuch as his name does not appear on the editorial staff, and not having been introduced by the Editor of The Auk, the writer regrets to be compelled to refer, in the present note, simply to the initials as signed.

Now the nest of the catbirds was in a bush located on a steep hillside. The blind being higher, enabled the observer to see over and around the bushes. Flies swarmed about on the foliage of these bushes, and the observer in the blind could see the catbird capture them and feed them to the young birds in the nest. A number of these flies were caught and submitted to an entomologist from Ames College, who was teaching that subject at the laboratory, and who named the flies as above. The paper did not state that every fly fed to the young birds was recognized as to kind. In the tables II and III they are simply listed as "Flies." The enumeration in the text may have been based upon specific data, or it may have been a general estimate based upon memory, and still be an accurate statement.

The original statement is perfectly safe, and scientifically accurate, notwithstanding the obstinate misinterpretation by the critic.

Now, in regard to the mosquitoes, which are also denied by W. L. M. in the statement above quoted. The one mosquito recorded in the catbird paper (page 179) was observed under the following circumstances, as communicated to me by the author of that paper: "The old bird was on the nest, and I was in the blind. As it was only 8:00 a. m., a few mosquitoes were still about. One in the blind buzzed around my face, and I struck at it with my hand. It flew out of the peep-hole, and as I idly followed its flight it lighted on a leaf within six or eight inches of the nest. The old bird immediately snapped it up and fed it to one of the nestlings."

With reference to the mosquito records in the Yellow Warbler study (Wils. Bull., XXV, June, 1913, p. 55), I can only call the reader's attention to the fact that as the observer sat in the blind, the nest was almost as close to his eyes as is a newspaper while being read—not over two feet away. The bill of a Yellow Warbler is only 3.5 mm. wide at its base, while the terminal third of it is not over a single millimeter in width. Thus even the body of a mosquito could scarcely be entirely concealed in the bill of such a bird. I am well aware that it is almost a waste of time to be discussing the question whether a mosquito was actually seen or not; but I would simply remark that when the possibility of it is so evident, it would seem that the critic is rather forcing an issue. When we admit the possibility of seeing one mosquito, the repetition of it, even to sixty-five times, should give us no greater concern.

Our captious reviewer displays a lack of knowledge of this kind of field work, and its methods, when he questions an observer's ability to count 5, 6, or 7 Mayflies in the beak of a Brown Thrasher at the nest. May I be permitted to call attention to a few elementary facts?

The date on which these seemingly large numbers of Mayflies were recorded was June 28, at which time the Mayfly swarms were at their maximum. In the evening dense clouds of them filled the air, and during the day the grass was full of them. Frequently the old birds fed in the

grass in close proximity to the nest, where they were under observation. In a few instances the Mayflies were counted as they were being gathered. On this date 244, counted, Mayflies were fed to the young.

Usually the old bird pauses an instant at the nest before feeding, during which time there is an excellent opportunity for counting. In fact, Mr. Gabrielson tells me that this summer, while watching a Rose-breasted Grosbeak's nest, he was able, by making a slight noise, to hold the male on the edge of the nest for three minutes, by the watch, while trying to determine the contents of its beak. I wish I might assure the critic that it is not surprising for the bird to have so many Mayflies in its beak; neither is it, under the circumstances, particularly difficult to count that number of them.

The ants may be discussed in a similar way. I think no more than three ants were recorded at any single visit. In all of these records, it is understood, I had supposed as a matter of course, that the number recorded were seen and counted; but it was not claimed, nor was it intended to convey the impression, that no more were in the bird's bill. For instance, if the old bird visits the nest with a beak full of ants, and the observer could distinguish the bodies of three individuals, it would be ridiculous to assume that no more than three were in the bird's mouth. This is so elementary!

It will be found that in Gabrielson's report on the Brown Thrasher study, in Table I, the plus sign was frequently used to indicate that a certain number of individual insects were recognized out of a larger number. In this report (Wils. Bull., XXIV, June, 1912, p. 84) there will be found the following statement: "It will be noticed in the tabulated data that the number of insects was not always determined exactly, but was entered in this manner, '6+ Mayflies,' etc. In all such cases the minimum number was used in computing the tables. As all of the persons who assisted were cautioned especially to note the number of insects exactly, it is safe to assume that if there be any error in the data it is in having recorded too few insects, rather than too many."

The reviewer then believes he has given sufficient illustrations of the inaccuracy of the work to demolish it completely, and proceeds with this *ex cathedra* pronouncement: "It should be recognized that reporting on the food of nestling birds on the basis of field observation is work for accomplished entomologists, not for amateur ornithologists," with emphasis, perhaps, on the "amateur." Of course, no one will dispute this statement, although the work is more likely to be done by an ornithologist who knows some entomology, than by an "accomplished entomologist." The only fault with such a remark is the animus revealed by it, which does not beget confidence or friendliness. The reviewer is expected to give more conclusive proof of inaccuracy before indulging in such caustic comment.

The very excellent pioneer report on the nest study of the Chipping

Sparrow by Dr. C. M. Weed* is cited as a model, because of the indefiniteness of identification of the food fed to the young sparrows. This nest of the chippy was "near" a window, from which it was watched; but nothing further was stated to enable one to know whether the distance was two feet or ten feet, or whether it was watched through an open or closed window. It is only fair to the authors of this paper to quote from page 109 as follows: "The precise determination of the most of the food brought was, of course, impossible, the observations having been undertaken especially to learn the regularity of the feeding habits of the adult birds." Since this study was not undertaken for the purpose of determining the nature of the food, it hardly seems proper, in fairness to the author, to set it up as an example of this line of work.

The reviewer's proposal to tie bags over the anal orifices of nestling birds for the purpose of collecting the excreta will be highly amusing to anyone who has noticed young birds in the nest. However, any suggestion coming from so well qualified a critic deserves attention, and the writer will endeavor to try out this new method at some future time.

As another suggestion that the authors of the several papers reviewed may have been deceived in their observations the reviewer has said, "A great many birds feed by regurgitation and the food is at no time visible." We take it that the reviewer here has in mind passerine birds, since no other order was involved in the discussion.

In our studies on the passerine birds we have succeeded in following the feeding of at least one out of a brood, from the moment it left the egg until it left the nest, in the cases of the yellow warbler, the catbird, and the meadowlark (report on the last having not yet been published); and in each of these instances there has been no feeding by regurgitation. This is known simply from the fact that the food has been visible in the bird's bill. It is quite possible, of course, that regurgitation may be found to be practiced by certain passerine birds, such as the flycatchers and the grosbeaks, and it is just such questions which can be settled by field observation. (I am not now considering the carrying of berries in the throat of a waxwing as coming under the definition of regurgitation.)

The reviewer's confession of limited experience in field work of this kind is sufficient reason in itself to make him more cautious of such vigorous, though quibbling, criticism.

It would seem that he is very skeptical of the value of field observations on the food of nestling birds in any case. It is to be assumed that he relies wholly upon the examination of stomach contents. But there are limitations to that method also. The examination of a stomach will give, at best, the story of only three or four hours of the bird's life. Even with the food mass in a watch glass, some of the material must be macerated beyond recognition. What is unrecognizable cannot

* Weed, Clarence M. An Observation on the Feeding Habits of the Chipping Sparrow. N. H. Agric. Exp. Sta. Bull. 55, 1898, pp. 101-110.

be taken into account, except as "unknown" or as "miscellaneous." If the tables or diagrams do not show this must we not conclude that the writer has discarded the unidentified material? Wilcox,* who examined over 200 stomachs of the robin in one year, says: "The determination of insect remains in the stomachs of birds is a very difficult and perplexing task, and one which is not all pleasant, since nearly all the material is in the very worst condition imaginable, and mutilated and partly digested fragments of several species of insects being mixed up in utter confusion. The elytra, mouth parts and tarsi are, of course, usually left to tell their tales, as are also the harder parts of all other insects, snails, myriapods and the seeds of the various fruits; but the soft bodied larvae and earthworms are too often macerated almost beyond recognition." (p. 118.)

Too often the adherent of stomach examination publishes only his percentage results, without the detailed data upon which his percentages are based, which are necessary in a strictly scientific piece of work.

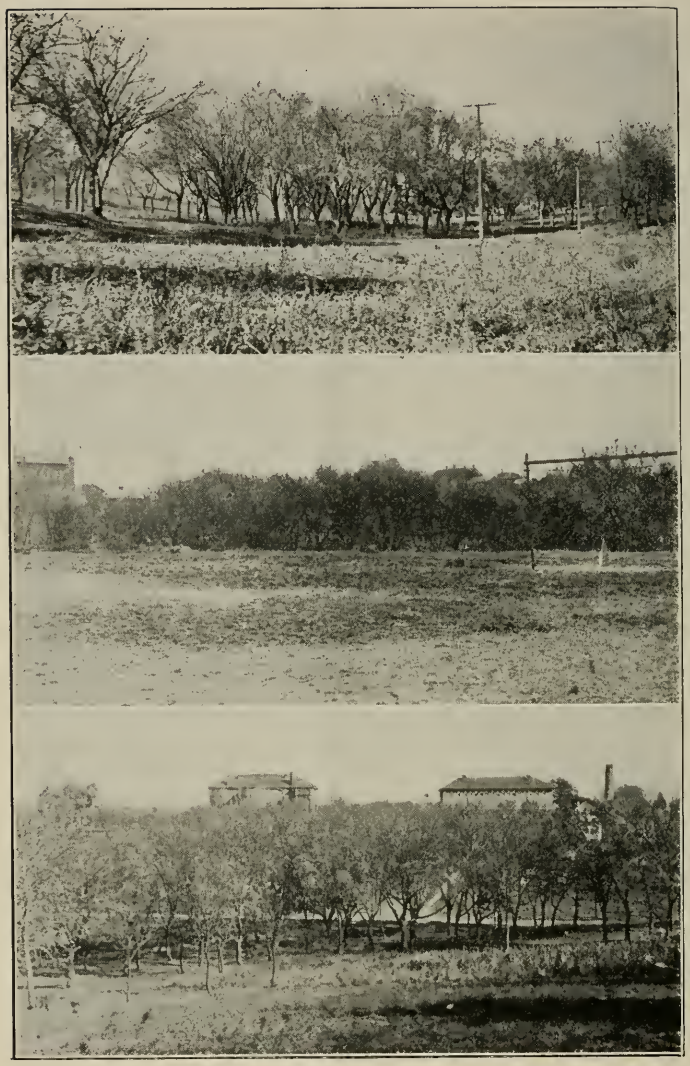
Most ornithologists will concede that field observations on the food of birds possess certain advantages; those who have had much practice in this method will understand that it yields results with far greater accuracy than its critics are ready to admit.

No field worker, I presume, would claim that field observations alone would give us a full knowledge of the economic status of a species. It will be claimed, however, that such observations contribute to such knowledge very largely, if not with parity, in comparison with other methods. Furthermore, this method is not destructive of life, which would become a fact of importance in the study of any rare species. It is not particularly reassuring to read the boast of having killed so many thousands of nestling birds in order to determine what their food had been for the last two or three hours. The writer recognizes that under certain circumstances it may be justifiable, but nevertheless, in the judgment of many this criticism will apply to the stomach method.

It would seem, when a careful review is made, that the hypercritical apostle of stomach examination ought to be more cautious whither he slings. To paraphrase the reviewer's closing remark, what is needed above all on the part of iconoclastic reviewers is more certainty and less quibbling, and more hard work in the field and laboratory that there may be developed an appreciation of the difficulties to be encountered in productive effort.

Sioux City, Iowa.

* Wilcox, E. V. Bull. 43, Ohio Agric. Exp. Sta., 1892, pp. 115-131.



THE SITE OF THE ROOST.

Upper, from the South-east. Middle, from the North-east.
Lower, from the West.

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NOTES ON A NORTHERN ROBIN ROOST.[1]

BY ARTHUR R. ABEL.

The Robin roost to be here described was located within the city limits of Sioux City, Iowa, in fact in a rather closely built up district of the city. The flight to the roost was first noticed about August 7, 1914, although no record was made at this time.

However, by the fifteenth the regularity of the flight had been noted and it was decided to determine its origin and destination. At this time the birds were flying in considerable numbers, from northeast to southwest, over Newton St. and the College Campus. On this evening the flight was watched on Newton St. from 7:15 to 7:28 when the flight practically ceased, and eighty-five birds had been counted.

On the evening of August 16th, the birds were first noticed at 6:50, and from this time to 7:30 110 birds flew over the route. By the thirtieth the numbers were considerably augmented, and I had planned to work over toward the northeast in hope of ascertaining how far they came.

Accordingly I left about six o'clock and went northeastward until I reached the ravines north of Morningside known as North Ravines. The country here was very hilly and the

[1] Read before The Sioux City Bird-Study Club, Nov. 3d, 1914.

flocks were seen first as they came over the ridge of the hills. I kept on going northeastward thinking that each hill concealed the ravines where the flocks formed. Each time however I was disappointed and was forced to go still farther on, until at last about dark I saw a few flocks fly out of a ravine about one and one-half miles from Newton St. This however did not prove to be the source of the supply for the next day about noon this ravine was deserted, proving that the flocks stopped only for a brief rest. On the same evening (the 30th.) we were surprised to find many kingbirds flying over the same route. The kingbirds, however, flew somewhat earlier than the Robins, although part of the time the flight was a mixed one. The last of the flight consisted entirely of robins, which flew until it became dark.

The Robins flew faster and with more rapid wingbeats than the Kingbirds. The observations of this evening made clear that the flocks gathered over a very large territory, and were formed by additions from the many ravines east of town. A word of explanation might be made as to the use of the term "flocks" in this connection. At the best time of the flight the birds came stringing in almost continuously, sometimes singly or in pairs, and sometimes in groups of from ten to twenty; often it required alertness to keep the count correctly. On the evening of the thirtieth, at a point about two miles west of where the roost was subsequently found, I counted 226 robins and 93 kingbirds.

On the next evening I went in the opposite direction, and found at some distance southwest of the college, the robins were flying in a direction reverse to that of the night before; this suggested that the roost might be nearer to the college.

On the evening of Sept. 1st, the roost was located in a small wooded hollow adjoining the athletic field. The central clump was composed of about fifty rather tall box-elder trees, pretty well crowded together so that the foliage was dense enough and high enough to afford protection and shelter. To the north there were a good many scattered trees, but on the east there was a large open space occupied by the athletic field,

which afforded an excellent place for counting. To the southeast there were a good many trees but they seemed to disregard them and fly directly over. At 6:27 p. m. most of the birds had congregated, and a few Kingbirds were also seen among the robins.

On the evening of Sept. 2, the roost was visited at 6:30 and only four Robins were counted in the trees. The first birds to fly in from the east came at 6:43 and from this on they came in from the east with rapidity until 7:30 when it became too dark to see or count them. By this time we had counted 302 Robins entering the roost from the north and east.

Territory where the Flocks Gathered.

Typical ravine in which Robins feed during the day.

The Kingbirds had vanished—none were to be seen, although a single one was seen in the roost early the next morning. The cold night of Sept. 1st, had probably been too much for them. It was decided to visit the roost early the next morning in order to see how it would break up. So at 3:45 A. M. we were on the ground, but everything was so quiet and dark and cold that we sought shelter. Returning at 4:55, we heard the first Robin chirp at 5:05. At 5:10 several flew silently from outside trees to the main roost. At 5:15 we

could say that morning had dawned, and a chorus of chirps and calls began which did not quiet down until the roost had been vacated. At 5:21 the first bird flew out. At 5:22 the calling became much louder, and we heard the call which can be best expressed by "whe-ap." At 5:25 the disturbance became quite general and there was considerable uproar, and much flying about among the trees.

At intervals about twenty-one mourning doves flew from outside trees and the main roost. At 5:20 a Blue Jay called and was answered two or three times by other Blue Jays; this seemed to stir the Robins up a little, and they began to leave in large numbers. Among other birds heard in and about the roost at this time might be mentioned the Baltimore Oriole, several Goldfinches, a Downy Woodpecker, and several Chickadees; while on Sept. 24th, about 100 Blue-birds rested there over night. At 5:45 about a hundred Chimney Swifts appeared, probably coming from a large chimney of a nearby schoolbuilding. By 6:50 the roost was practically deserted except for two or three Robins which had been stunned by flying into telephone wires. The great majority of the Robins on leaving the roost, flew out a short distance, alighting in other trees or on wires, where they seemed to take a brief rest before proceeding to the feeding grounds. On the way from the roost the Robins were seen on all sides, on the College Campus, in private yards; many were on the ground feeding, others were perched in trees and on the roofs of houses. No doubt the birds gradually dispersed to the outer limits of their feeding range, for by ten o'clock they had disappeared from the immediate neighborhood.

On Sept. 4th, an effort was made to count the Robins arriving from the south, as well as from the north; at this time 362 birds were counted, in a similar manner 558 were counted on the evening of the eighth.

On Sept. 9th, a heavy rain fell throughout the day, in fact it was said to be the heaviest rain in sixteen years; darkness settled rather early in consequence of the cloudiness. Although watching under these circumstances was uncom-

fortable it seemed advisable to ascertain what effect the weather conditions would have upon the flight. The first Robin flew into the roost at 5:47; they now followed regularly at intervals of two or three minutes, at 6:06 thirty birds flew in. The watch was now discontinued, as it seemed that the only noticeable change was that the flight started fifteen or twenty minutes earlier than usual. But as there was no cessation in the steady and almost uniform downpour this is attributed to the earlier twilight.

It was thought desirable to attempt a complete census of the birds arriving from all directions. Accordingly on the evening of Sept. 11, a number of members of the Sioux City Bird Study Club visited the roost and assisted in the counting. It was thought that all the birds could be observed by establishing three stations, as follows: the writer undertook to watch the flight from the west; the southeast quadrant was watched by Dr. Stephens and Mr. Fields; and the northeast quadrant was watched by Mrs. Fields and Miss Hood. Altogether 761 Robins were counted as they entered the roost from all directions.

The following table shows the only complete census that we made:

Time	West	Northeast	Southeast	Total
6:04		2		2
6:08		2		2
6:15	3	2		5
6:16			2	2
6:17	5		5	10
6:18		1	1	2
6:19		2	2	4
6:20		16	1	17
6:21		6		6
6:22		19	1	20
6:23		2		2
6:24		7		7
6:25		3		3
6:26		15		15
6:27		2		2
6:28		4		4

Time	West	Northeast	Southeast	Total
6:29		7		7
6:30	1	24		25
6:31		3		3
6:32	6	27		33
6:33		18		18
6:34	1	8	11	20
6:35	1	2	4	7
6:36		4		4
6:37		45		45
6:38		46	21	67
6:40		17	31	48
6:41		21	28	49
6:42		4	25	29
6:43	1	7	23	31
6:44		10	28	38
6:45		9	11	20
6:46	4	32	20	56
6:47	2	24	19	45
6:48		12	16	28
6:49		3		3
6:50		9		9
6:51		6	7	13
6:52		9		9
6:53		10	3	13
6:54		9		9
6:55	3	3	4	10
6:56			1	1
6:58		8		8
6:59		2		2
7:03		1	2	3
7:05			1	1
7:06		2		2
7:09		1	1	2
				Total....761

It is believed that this count is approximately correct, i.e., probably not more than a hundred birds were missed in the counting. Of course to one who is witnessing the flight, without attempting to make a count, there would probably come temptation to estimate them by the "thousands"; a flock of even several hundred birds presents quite an imposing array.

From this time observations were made only on the Northeast quadrant, and there seemed to be a very rapid decrease in numbers. Since a complete census was not attempted later it will probably be best not to give any incomplete figures. Suffice it to say that the observations were made every three or four days until the middle of October. After Sept. 27 there were only scattered individuals; and on Oct. 16 none flew in from any direction.

It seems to be a regular habit of Robins to roost in immense flocks in their winter homes in the south, and there are numerous published accounts of the wanton slaughter of them under such circumstances. But if it is their habit to roost thus at the close of their breeding in the north, before the fall migration, it does not seem to be very generally recognized.

Mr. Wm. Brewster publishel nearly twenty-five years ago,[1] a most admirable account of several "Summer Robin Roosts" near Cambridge. His observations on the behavior of the birds were so complete that little can now be said in addition. The present paper must be largely in the nature of a confirmation.

Our observations agree in that the flight was not equal in all directions, and that various other species of birds, in small numbers, often became associated with the Robins in the roost.

Mr. Brewster also discusses the matter of the composition of the roost as to the sex, and gives some reasons for thinking that the summer roosts are made up of the males and young of the first broods of the year. Fisher[2] also expresses his belief that the fall roosts of the Barn and Bank swallows consisted of males. I have been unable to make any positive observations on this point; but, in as far as the lighter color of the breast is indicative of sex, I should incline to the opinion that the roost under my observation contained a fair proportion of females.

The manner of flight to the roost seems to be distinctive in

[1] The Auk, 7, 1890, pp. 360-373.

[2] The Observer, 7, 1896, pp. 382-384.

some birds. Dr. Jones[1] found that the Grackles formed in rather definite and compact hosts, even remaining together while feeding during the day. It is not this way with the Robins. Their flight is more like a continuous stream, now broad enough to fill a considerable segment of the horizon, now narrowed to a single individual; sometimes even ceasing temporarily.

As would be supposed the birds flew close to the ground on dark cloudy days and much higher on clear sunlight evenings.

The birds seemed guided in flying by the conditions of light and if the darkness came earlier the flight was correspondingly early. The height of the flight lowered as darkness came on so that at dusk the Robins were skimming along close to the ground swerving from side to side in avoiding the numerous obstacles. When flying high the birds maintained about the same level until directly over the roost then darting down with set wings to the topmost branches where they hesitated a minute or two before diving down into the depths of the foliage. The first arrivals seemingly realizing that they were early occasionally went off to the nearby alfalfa and corn fields to feed, returning about dusk to roost. Then for a few minutes a squabble usually took place as they selected and fought over their roosting places.

Soon only a few individuals were heard as they uttered their plaintive calls; but in a short time this also died away and no sign remained to tell of the large number of birds so near.

Further notes were made on the habits and behavior, but these details have already been fully described in Mr. Brewster's paper, which the reader will find to be a most entertaining account.

Sioux City, Iowa

[1] Wils. Bull., 9, 1897, pp. 39-56.

THE BIRDS OF THE DOUGLAS LAKE REGION

BY JAS. S. COMPTON.

The Biological Station of the University of Michigan is located on Douglas Lake in the western part of Cheyboygan County, Michigan, in a district almost equidistant from the Straits of Mackinac, and the Great Lakes, Huron and Michigan. The data upon which this paper is based were gathered by the writer while in residence at the Station during the summers of 1913 and 1914. The session at the Station like that of the university of which it is a part covers a period of eight weeks beginning the last of June. The weather conditions, then, are those of midsummer in the region of the upper Great Lakes.

The region about Douglas Lake has a remarkable geological history, most of it at one time or another during the Glacial Epoch having been moraines, outwash aprons, lake beach, lake bottom, lake dune, or two or more of these different deposits, an outwash apron at one time furnishing the materials to build a lake beach, and it a little later in turn the sand for a dune.[1] The soil is sandy; much of it has little in it besides well worn grains of quartz; in some places especially on the higher levels where least washing by wave action has taken place there is much gravel and a little clay and loam. So far as permanent human settlements are concerned most of the region is still wilderness, the barren sand having little attraction for even the most land-hungry. Conditions of life for man and beast and bird are decidedly primitive.

A generation or less ago the land was heavily forested with white and red pine, hemlock, spruce, hard maple, beech, birch, white cedar, balsam, tamarack, swamp maple and black ash, but now little of the original growth remains. In only one place within a radius of three miles of the Station can the primeval conifer-hardwood forest be seen untouched by forest fire or the ax of the lumberman. This oasis is Fairy Island in Douglas Lake, an exception to the rule because of its isolated

[1] Summary of Surface Geology of Michigan. Alfred C. Lane, 1908.

position. Two tracts of cut-over hardwoods lie within a mile of the Station, a typical cedar bog two miles distant on the north shore of Burt Lake, and all about and between are the sand hills and plains covered with aspens.

The cut-over hardwoods are a vast brush-heap laid and ready for the match. Tree-tops in varying stages of dissolution cover the ground lying as the lumberman left them when he withdrew; the few trees that he failed to cut down, the saplings and second growth that have since sprung up, project above but scarcely conceal the debris. So numerous are the fallen trunks and so dense the foliage of the shrubby growth that one may sometimes walk for rods upon them without so much as a glimpse of the earth beneath him. Under this leafy jungle where the midsummer sunlight seldom falls is a thick layer of humus and wood in all stages of decay inhabited by hordes of lowly creatures, ants, worms, snails, beetles, and larvae of many insects. Here in July and August are plenty of berries, especially of the red-berried elder and the red raspberry fruiting wherever they can find a place to grow. It would be difficult to find conditions of food and shelter more acceptable to the forest avifauna than are afforded by these cut-over hardwoods.

The large bog on Burt Lake to which reference has been made may well serve as a type of the bogs of the region as there are a number of smaller ones partly filled with vegetation and sand washed down from the adjacent higher land. This bog, known locally as Reese's Bog, has evidently been formed by dune or wave action that resulted in the cutting off of a large shallow arm of the lake; the quiet bay thus formed became filled with vegetation, each generation of plants at its death laying the foundation on which the next was to grow. Underfoot now is a water-soaked carpet of Sphagnum and other mosses, sundews, orchids, and other water-loving plants into which the foot sinks to shoe-top; overhead the trees meet in a tangle of twigs, white cedars, balsams, spruces, and larch, with here and there a swamp maple, a white birch or a black ash. The competition for sunlight

is very keen; most all of the survivors are dead in their lower limbs and are soon adorned for the funeral by a vigorous colony of lichens, both of the crustaceous and filamentous kinds. Only in a few places in the old logging roads does the sunshine fall without obstruction even at noon; in such favored places there is a vigorous growth of vegetation of many species, more than two hundred having been officially identified by the botanists of the Station. Numerous minute pools of water in the moss, and several brooks flowing a few inches below the surface tell us that water is never very far away, and suggest that perhaps Burt Lake has never quite given up the struggle for this part of his ancient domain.

The aspens are the pioneers of the drier lands. They enter upon the scene early, tame the sand down a little and hold it in their possession till the more dominant types appear, fighting always a losing fight in which it is foreordained that they go under unless some outside force interrupts the orderly march of events and starts the plant succession back near the beginning. The outside force that has intervened in this instance is the forest fire which has swept away practically all of the splendid mixed pine and hardwood forest that once covered these sandy stretches. Fire after fire has swept through this aspen territory till now in a few localities it is nearly as bare of vegetation, other than mosses and lichens, as it was the day the sullen waters of the glacial lake retreated from it for the last time. Among the aspens grow the white birch, red oak, pine, and a number of berry-bearing plants such as the blackberry, huckleberry, two kinds of blueberries, the pin cherry and the wintergreen.

The habitats discussed in this paper are the three that have been described at some length in the foregoing pages.

The tent which the writer lived in during the period mentioned was located on the beach of Douglas Lake; obviously the opportunities for observation were best in this habitat; furthermore the lake was rimmed by a growth of pines that stood just where the beach and the aspens meet. There was very little marsh or swamp in the region; if we use the term

swamp, for instance to designate a tract of wet land grown up with reeds and coarse grasses, cattails, etc., but without any conspicuous woody shrubs or trees as is the case with the bog.

These habitats are of interest only in their relation to the birds living in them. Some species show decided preferences for one plant association: the golden-crowned kinglet found only in the cedar bog, the junco only in the aspens; others like the hermit thrush were more generally distributed, being found in the bog, hardwoods, and aspens alike. At the end of June there is quite a large bird population in the aspens, but by the middle of August it is very much reduced both in numbers of individuals and of species observed. A half day's jaunt in the aspens the forenoon of July 8 gave me a list of 23 species; two days before a similar trip in the hardwoods gave 41 species. On August 7 the number seen on a sunny forenoon's trip was 6 species; the next forenoon in the hardwoods my list was 46 species.

In the list which follows will be found the English names of the species, the habitat preference of each species, the frequency, the abundance, and nesting data where any were gathered. Frequency and abundance as here used need a word of explanation. The former term refers to the comparative frequency with which the species, not the individual, was seen; in this connection I have used three degrees as follows: r or rare=seen from 1 to 4 times; c or common=seen from 5 to 20 times; a or abundant=seen more than 20 times. Abundance, on the other hand, applies to the total numbers of individuals of the different species seen during a given period; in this case the period covers from June 30 to August 7, stopping before the fall migration gets any headway to disturb our study of midsummer birds. (1) under abundance means that this species stands highest in number of individual birds seen, 227 in our study; at the other end of the scale of abundance (47) means that only 1 bird of this species was identified. With this explanation it will not be difficult to interpret the data:

Name of Bird	Nests or Young	Abundance	Frequency	Habitat
Bluebird	(38)	c.		cultivated areas
Robin, young	(17)	a.		all habitats
Hermit thrush, 9 nests	(9)	a.		all habitats
Olive-backed thrush, 1 nest	(41)	r.		hardwoods
Wood thrush	(47)	r.		bog
Wilson thrush	(46)	r.		hardwoods
Blue-gray gnatcatcher	(46)	r.		bog
Golden-crowned kinglet	(39)	c.		bog
Chickadee, young	(21)	c.		all habitats
Red-breasted nuthatch	(46)	r.		bog
White-breasted nuthatch	(22)	a.		bog and hardwoods
Brown creeper	(47)	r.		hardwoods
Winter wren	(23)	c.		hardwoods and bog
House wren, 1 nest	(30)	c.		cultivated areas
Brown thrasher, 1 nest and young	(26)	c.		hardwoods and aspens
Catbird	(42)	c.		hardwoods and aspens
Redstart, 2 nests	(14)	a.		hardwoods and aspens
Canadian warbler, nest ?	(43)	r.		hardwoods and aspens
Maryland Yellow-throat, nest ?	(32)	c.		hardwoods and beach
Mourning warbler, nest ?	(46)	r.		hardwoods and beach
Ovenbird, 1 nest	(11)	c.		hardwoods and aspens
Pine warbler, nest ?	(34)	c.		beach (pines)
Black-thr green warbler, young	(29)	c.		hardwoods and bog
Blackburnian warbler, 1 nest and y	(44)	r.		hardwoods and bog
Black-throated blue warbler	(40)	r.		hardwoods
Blackpoll warbler, young	(46)	r.		hardwoods
Tennessee warbler	(46)	r.		hardwoods
Chestnut-sided warbler, 3 nests	(21)	c.		hardwoods
Myrtle warbler	(46)	r.		beach (pines)
Yellow warbler	(46)	r.		cultivated areas
Nashville warbler	(46)	r.		hardwood
Black-and-white warbler, nest ?	(34)	c.		hardwood and bog
Blue-headed vireo	(45)	r.		hardwoods
Yellow-throated vireo	(46)	r.		hardwoods
Red-eyed vireo, 1 nest and young	(5)	a.		hwd, bog and aspens
Cedar Waxwing, 1 nest and young	(1)	a.		all habitats
Tree swallow, young	(28)	c.		beach and open water
Barn swallow, young	(45)	r.		cultivated area
Purple martin	(46)	r.		cultivated area
Bank swallow	(44)	r.		beach and open water
Cliff swallow, young	(32)	c.		cultivated area
Scarlet tanager, 1 nest	(36)	c.		hardwoods
Indigo bunting, 1 nest	(23)	c.		hardwoods and aspens
Rose-breasted grosbeak	(44)	r.		hardwoods
Towhee, 4 nests	(4)	a.		all habitats
Goldfinch, nest ?	(7)	a.		all habitats
Purple finch	(39)	c.		beach
Junco, 1 nest	(15)	a.		aspens
Song sparrow, 2 nests and young	(2)	a.		beach and hardwoods
Swamp sparrow	(46)	r.		beach
Field sparrow	(47)	r.		hardwoods
Chipping sparrow, 2 nests and young	(13)	a.		hardwoods and aspens
White-throated sparrow, young	(18)	a.		hardwoods and bog
Lincoln's sparrow, young	(45)	r.		hardwoods

Name of Bird	Nests or Young	Abundance	Frequency	Habitat
Savanna sparrow	(45)		r.	aspens
Vesper sparrow, 4 nests and young.	(8)		a.	aspens
English sparrow, young	(20)		c.	cultivated areas
Bronzed grackle	(46)		r.	beach
Meadowlark	(38)		r.	cultivated areas
Red-winged blackbird, young	(42)		c.	beach
Cowbird, young	(24)		c.	all habitats
Bobolink, young	(43)		r.	cultivated areas
Crow, young	(3)		a.	all habitats
Blue jay	(26)		c.	bog
Prairie horned lark, young	(43)		r.	cultivated areas
Least flycatcher	(45)		r.	hardwoods
Acadian flycatcher	(46)		r.	hardwoods
Olive-sided flycatcher	(46)		r.	hardwoods
Wood pewee, 1 nest	(19)		a.	hardwoods and aspens
Phœbe, 2 nests	(43)		c.	cultivated areas
Crested flycatcher	(47)		r.	hardwoods
Kingbird, young	(15)		a.	all habitats
Hummingbird, 1 nest	(42)		c.	all habitats
Chimney swift	(26)		a.	all habitats
Nighthawk	(10)		a.	all habitats
Whippoorwill, 2 nests	(12)		a.	aspens
Northern flicker, 1 nest	(14)		a.	all habitats
Red-headed woodpecker, 1 nest & y	(42)		c.	hardwoods
Yellow-bellied sapsucker, young	(20)		a.	hardwoods
Downy woodpecker, young	(25)		a.	all habitats
Hairy woodpecker	(36)		c.	hardwoods
Belted kingfisher	(16)		a.	beach
Black-billed cuckoo	(44)		r.	hardwoods
Screech owl	(47)		r.	hardwoods
Barred owl	(46)		r.	hardwoods
Short-eared owl	(47)		r.	hardwoods
Osprey	(46)		r.	beach and open water
Marsh hawk	(42)		c.	aspens
Cooper's hawk	(46)		r.	hardwoods
Sharp-shinned hawk	(46)		r.	hardwoods
Broad-winged hawk	(47)		r.	hardwoods
Sparrow hawk	(45)		r.	hardwoods and aspens
Rose-breasted Grosbeak, young	(44)		r.	bog
Bald eagle	(43)		r.	beach
Mourning dove	(46)		r.	beach and aspens
Ruffed grouse, young	(20)		a.	hardwoods and aspens
Quail	(46)		r.	cultivated areas
Killdeer, young	(23)		c.	beach
Spotted sandpiper, 1 nest and y	(6)		a.	beach
Solitary sandpiper	(46)		r.	beach
Virginia rail, 1 nest	(46)		r.	beach and swamp
Great blue heron	(43)		c.	beach
Blue-winged teal	(46)		r.	beach and open water
Wood duck	(47)		r.	beach and open water
Red-breasted merganser, young	(17)		c.	beach and open water
Bittern	(47)		r.	beach and open water
Buffle-head duck	(37)		c.	beach and open water

Name of Bird	Nests or Young	Abundance	Frequency	Habitat
Common tern		(46)	r.	beach and open water
Caspian tern		(33)	c.	beach and open water
Pied-billed grebe		(47)	r.	beach and open water
Loon, young		(28)	c.	beach and open water

Only such nests as were found actually occupied by the birds are recorded as "nests," the accompanying numeral indicating the number belonging to that particular species. The word "young" is used to indicate that young of the species were observed outside of the parental nest. "Nest?" is used to designate a probable nest, probability being based on seeing the parent bird with a larva in its beak, at the same time showing great concern over the approach of the writer.

12 of the species on the list show a decided preference for the society of man, for his houses, barns, cultivated lands and the like. With the 11 native birds this preference is doubtless acquired recently in a biological sense, the other, the English sparrow has doubtless had this preference for a long period of time even as biologists reckon it. They are the bluebird, house wren, yellow warbler, barn swallow, purple martin, cliff swallow, meadowlark, bobolink, prairie horned lark, phoebe, and quail; these all rank low in the scale of abundance, the house wren (30) being most abundant, the average for the 11 about 41.

The habitats most characteristic of the wilderness are the bog and the aspens, of our list 6 belong to the former and 5 to the latter; it will be noted that together they equal the number of native species showing a preference for human society. The vesper sparrow has an abundance of (8) and the whippoorwill (12), but the others rank much like the birds of the preceding paragraph.

35 species showed no decided preference of any kind, but were quite generally distributed thruout the territory. To this group belong the cedar waxwing (1), song sparrow (2), crow (3), and towhee (4). Of the chewink or towhee Barrows says: "It is far from common about Little Traverse in Emmett County."[1] It is only two miles to the Emmett-

[1] Michigan Bird Life, W. B. Barrows, 1912, page 526.

Cheyboygan county-line from the Station and only twenty to the Little Traverse Bay at Bay View.

Of the 25 listed as belonging to the "beach" or to "the beach and open water" only 14 will probably be called water birds. Of these the spotted sandpiper has an abundance of (6) and the red-breasted merganser (17), while the others rank rather low, from (28) to the lowest of all (47). Possibly Douglas Lake is too small to compete successfully with the larger lakes, Burt, Mullet, Huron and Michigan, none of which is more than 20 miles away, for the favor of the gulls and terns, and possessed of too little swamp to compete with Indian and Crooked Rivers for the favor of the coots and bitterns. Two trips were made to these rivers and on each of them large numbers of swamp birds were seen, but they are too far from the Station to be visited regularly; for this reason the records are unavailable for our purpose.

A HERMIT THRUSH STUDY.

BY CORDELIA J. STANWOOD.

A hill wooded with gray birches and evergreens slopes down to a peat bog. Just above the swale grows the painted trillium that carries at its snowy heart the symbol of the Trinity in royal purple. One morning as I plucked a handful of these dainty blooms, I flushed a brooding Hermit from her eggs. A small fir shaded the nest. The three green-blue eggs made a charming bit of color against the dull orange lining of pine needles.

Twelve days later I visited the nest again. The woods were now sweet with linnea and three fascinating little Thrushes, about seven days old, welcomed me with a wide expanse of golden throat. The young birds had beautiful, large eyes; the natal down was conspicuous at the close of the quill stage; and the tips of the olive and buffy feathers were just beginning to show beyond the quill casings.

I was anxious to try an experiment with tame Thrushes,

TAME HERMIT THRUSHES.

PHOTO BY CORDELIA J. STANWOOD

so I carried the little birds home. The journey to my home did not disturb them in the least. They ate bountifully of bread and milk from a little gold-lined, silver spoon, took a few drops of water and slept the greater part of the day with their heads straight in front of them.

After the first day, I varied their diet with earthworms, ants' eggs, steak, wild pears, strawberries, a spider, or a fly occasionally, and a grasshopper when I was able to find it.

Until the morning of the fourth day the Hermits remained as distinctly inside the small nest as if an invisible wall separated them from all else. They grew rapidly, ate well, preened vigorously, scratched their ears with their toes, and although the nest was quite deep, voided all excrement without it, sometimes standing on the edge of the nest to do so.

In the middle of the morning of the fourth day, they slowly and cautiously stole forth from the nest, one at a time, just as they do in the wild woods. From that moment they insisted on flying and perching and refused to snuggle down anywhere.

During the eleven days that followed, I carried the birds to the woods for part of each day, or the entire day and let them run wild. At night I took them in and they perched at dark in the balsam boughs that I placed for them over a door. At first I remained near them all the time that they were in the woods, and fed them as they came for food. Later I put them out early in the morning, and went and fed them as often as once in two hours.

The first afternoon in the woods, I saw one Hermit take a sunbath with his feathers all fluffed out, one pick up a small brown caterpillar, and another several mouthfuls of earth.

The moment that I put the Thrushes down near a shallow pool below the spring, and rippled the water with my hand, the birds entered the pool, drank, and splashed the water all over themselves. These irresistible, immature birds, going to the water so slowly, cautiously, and surely, and bathing after the exact patterns handed down to them made an awesome as well as a pretty picture.

Between feeding times when the birds were not seeking food for themselves, they liked to snuggle down on the pine needles under low firs, or among dead leaves and sticks in hollows, or to perch on dead branches or stumps. The Thrushes resembled their surroundings so closely that I was in constant fear lest I should step on one. I always examined the ground carefully before advancing a step.

When in the woods, the birds kept in touch by a very sweet, low call that sounded like *phee*. A bird became uneasy at once if he lost his mates. I heard them call *peep* frequently, and also *chuck* once. One day when I covered a little bird in a basket to take him to the studio, he gave the pitiful call that the parents give when concerned for the safety of the young in the nest, a call that sounds like a *deep sigh*.

Even after the young had been in the woods for several days, they would have suffered for food and water without my constant care. I found that it was necessary to select a new feeding place for them where they must find water, and where they could not avoid the wild birds that came to drink and bathe.

When the Hermits were about fifteen days old, they awoke me one morning, calling for food. I fed them and returned to my room. When one became hungry again, he perched on the molding of the door through which I disappeared and called until I came and fed him.

When seventeen days old, the Thrushes were able to pick up anything from the floor such as ants, ant's eggs, flying ants, small spiders, and the like.

Often tame young birds will follow voices, and fly up onto a stranger and beg for food instead of helping themselves. To counteract this tendency in my Thrushes, I never exhibited them to company at home, I never took visitors to see them in the woods, I never called them save at the feeding place, I never answered their welcoming peeps until I arrived at the feeding tree. Although I loved them dearly, I never petted or coddled them. And I never spared myself any exertion that would add to their health, comfort, or safety.

PAINTED TRILLIUM.

In the environment of the Hermit Thrush.

PHOTO BY CORDELIA J. STANWOOD

When the Thrushes came to feed, they liked to perch on my arms, head, or fly into my lap. They disliked being held across the wings, and strenuously resisted being caught. Every day they became more swift in their movements, more sensitive to sounds, and less dependent on the food supply that I brought to them.

I saw them pick up brown and green caterpillars, moths, and ants, besides such food as I left on the ground for them as spruce bud moths, grasshoppers, earthworms, ants' eggs, wild pears and wild strawberries.

A few days later, after I began to leave the Thrushes out nights, there came a severe rain storm. I was able to visit the Thrushes but twice that day. I found them dry save the tips of their tail feathers and not very hungry. The following day I carried food to them three times. On one of these trips, a little Thrush came to meet me, dripping from his bath in the spring. Although the feeding tree was not more than six yards from the wire fence that separated the woods from the open pasture and the spring, I never knew the Thrushes to come through the wire fence when anyone was at the spring.

They now ate so rapidly that it was awkward for them to open their mouths sufficiently to take steak from the scissors, and there was danger of cutting their mouths or throats. A mouthful or two sufficed and they darted away. They were also extremely quiet and started and listened at every sound.

The Thrushes were so well able to care for themselves that it seemed needlessly cruel to toll them to a certain spot with food where animals of prey might lie in wait for them. My frequent visits, also, kept them from their kind. Their parents drank and bathed at this same spring. I did not visit the feeding spot again. I never saw or heard of the Thrushes again.

I have lived with several Thrush families and I do not hesitate to affirm that this experiment might not have been so successful with all of them. Most young Thrushes when tamed, particularly when excessively petted, loose all instinct

for caring for themselves; they are little fool birds. However, Thrush character varies; it is as beautiful and flexible as the bird's wonderful voice. While nearly all Thrushes are extremely gentle and affectionate, I must confess that the only bird that ever dealt me a blinding blow in the eyes with his wings, when I accidentally startled the young from the nest was an extremely beautiful specimen of the Hermit Thrush. In one family I have found one helpless little bird that insisted on sitting in my note book all the time, with two that resented too much attention.

June 15, 1912, I found a Hermit Thrush incubating three eggs.

June 26, the young Hermit Thrushes were seven days old; it was the end of the quill stage; I took the young Thrushes to study.

June 29, the young Hermits left the nest.

June 30–July 10, the young Thrushes spent part or all of each day in the woods learning to feed. They perched in fir boughs in the house at night.

July 10–July 15, I freed the Thrushes entirely and fed them what was necessary.

July 15, the Thrushes appeared to be in an almost natural state. They were entirely competent to care for themselves.

A BRIEF STUDY OF THE NEST LIFE OF THE BLACK-THROATED GREEN WARBLER.

BY CORDELIA J. STANWOOD.

Beside a shady path that marked the course of a neglected woodroad, a pair of Black-throated Green Warblers constructed a nest, near the tip of a branch of a large spruce tree, but three and one-half feet above the ground. It is not very often that the Black-throated Green Warbler provides the student with such an excellent opportunity for studying her nest. Usually these birds build at a greater elevation.

This spruce stood in a clump of firs that bordered an open space in the woods.

There was just room enough among the trees to erect a small balsam blind. When it was completed, my face was about a yard from the nest, and it was so dusky in the tent, that there was little fear of the birds becoming aware of my presence, save when I moved.

As usual, the nest was a dainty-looking, soft, strong, warm cradle. Fine spruce twigs, curls of birch bark, bits of dead wood, secured and cemented together with spiders' silk, gave the substantial foundation. The lining consisted of plant down similar to that of the cinnamon fern, a few threads of black plant fibre, and a few of the dull, orange setae of some moss such as *dicranum* pulled before they were ripe. The nest was just large enough to accomodate four, plump, hungry, sleepy, little Warblers.

Hidden in the blind, I saw the mother bird brood the young, cleanse the nest by burrowing under the young, and carry away the excrement. The diet of the young consisted of brown, white, gray moths, a fly-like insect, a bee-like insect, a small beetle similar to the larder beetle, and a large number of smooth caterpillars, both green and brown. Sometimes the mother bird fed three brown or three green caterpillars to one nestling at a time. Often besides the insect that I was able to distinguish, was a mass of other insect food that I was unable to place. Usually each bird fed several nestlings at each feeding but not more than three at one feeding.

The first day after the tent was constructed, I observed three hours in the afternoon—from 12:37 to 3:05 p. m. A bird came a dozen minutes after I entered the blind. During that time, the male fed the young nine times, and carried away the excrement three times; the female fed the young nine times; one visit was made by a bird whose sex I did not determine; the rate of feeding the young was once in nine and one-half minutes; during my stay, I saw a few of the insects fed to the young; among them were seven smooth, green caterpillars, two brown moths, and three gray

moths; when the female fed the young she twittered *sint, sint, sint.*

At this stage the young twittered faintly when the birds came, gave a vigorous food reaction, preened a great deal and yawned. They had yellow beaks, brownish at the tip, throats lined with red, greenish-grey upper parts, wings darker than the back, two buffy-yellow wing-bars, buffy-yellow underparts, and almost invisible streaks on the breast. Most of the time the young rested their beaks on the rim of the nest, at other times they raised them at an angle of 60°.

The parent birds had formed a habit of walking out the branch to the west side of the nest, but when both birds came at the same time, the male sometimes came to the north side of the nest and the female to the east.

The following morning I was present at the blind from 7 a. m. to 11:11 a. m.—four hours and eleven minutes. During this time the parent birds fed the young once in seven and one-half minutes. The male brought food thirteen times, and the female sixteen times. On the bill of fare I saw one fly-like insect, one bee-like insect, one beetle similar to the larder beetle, ten smooth green caterpillars, eleven smooth brown caterpillars, one white moth and three brown moths. The morning was very wet and foggy. The young are more hungry at this time of day, and usually more caterpillars and fewer moths are served, I suppose on account of the dampness.

The eyes of the young looked intelligent; one called when the parent left the nest; they all snuggled down in the nest when I moved in the blind.

In the evening I spent an hour in the blind. At 7:25 the female fed the young. I remained in the blind until 8 P. M. It was so dark in that part of the woods that the nest ceased to be visible. I saw nothing more of the parent birds.

Two days later the young were still in the nest in the morning. At noon the little grove was deserted and the nest of the Black-throated Green Warbler was "To Let."

THE DETERMINATION OF THE FOOD OF NESTLING BIRDS.

BY ALVIN R. CAHN.

I note with interest the discussion regarding the relative value of field observations and laboratory examinations in the determination of the food of nestling birds, and beg leave as an "outsider" to say a word on the subject, and to offer a suggestion. The controversy, in a word, seems to be: Are field observations of the food of nestling birds of any

HOUSE WREN WITH FOOD FOR YOUNG.
PHOTO BY A. R. CAHN

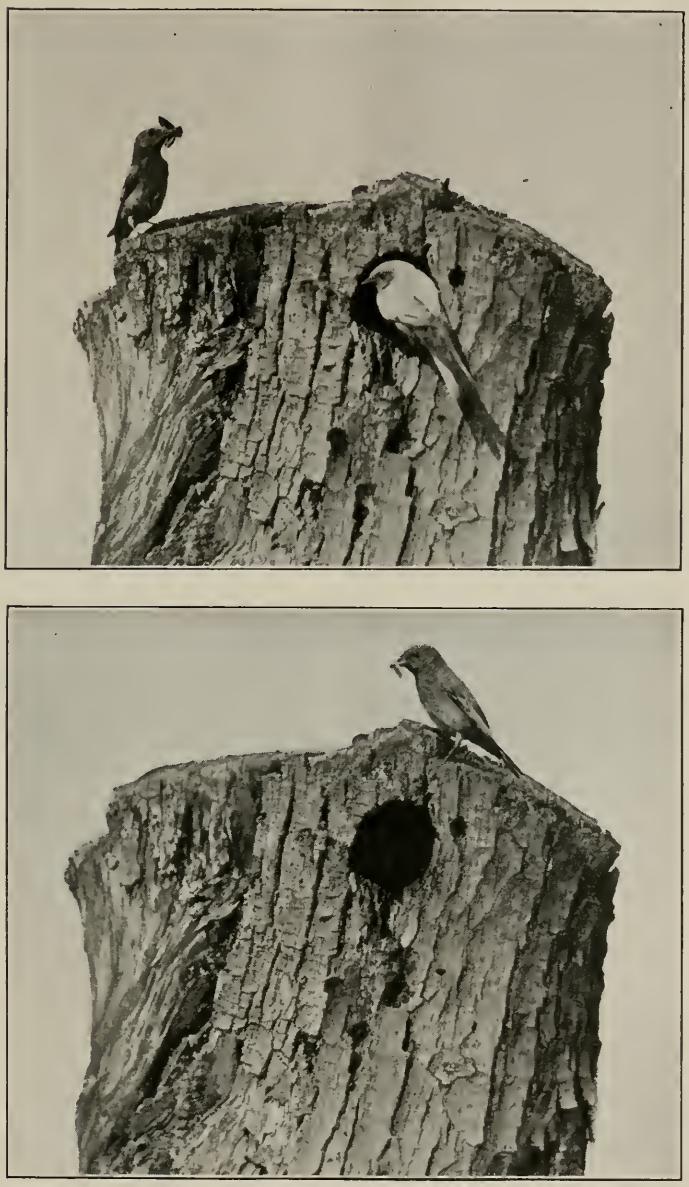
value as compared with the laboratory examination of stomach contents?[1] My answer to this question would be that

[1] W. L. M., Auk XXXI, July, 1914, pp. 420-421 vs. T. C. Stephens, Wilson Bul., XXIV, Sept., 1914, pp. 157-161.

each method serves its own end, and that neither can to any extent supplant the other; that there are at least *two* big problems in connection with the food of birds: the determination of the specific food, and the amount of food eaten, and each problem demands a different method of solution.

Laboratory examination of the stomach contents yields at best a list of specific material which chanced to be in the process of digestion at the time the fledgeling was killed—a list of species which, as W. L. M. states, requires an accomplished entomologist to compile. Given the tarsus of a beetle, it would indeed require an expert systematic entomologist to place that appendage in the proper family, genus and species to which its owner belonged. And with the very many species of beetles which abound in nearly every habitat, it would probably require a specialist in Coleoptera to perform the task to the satisfaction of the exacting scientific world. In a similar way it would require a specialist in Lepidoptera to ascertain with any degree of certainty the species of moth or butterfly to which a head, a particle of wing, or an isolated leg belonged. The great advantage of stomach examinations is the determination of *specific* animals eaten, and unless this is exact, the value of the method as a means of determining the food of the bird is minimized.

Field observations, on the other hand, should yield data on the amount rather than on the species eaten. It is no difficult matter to watch the feeding of nestlings, whether the neighborly warbler and sparrow, or the hawk nesting on the face of a perpendicular cliff. I have sat in a blind four feet from the nest of a Redstart and have watched the actions of the young and parents; I have removed the Song Sparrows from the nest and had the parents feed them, perched on my finger, within less than a foot of my eyes; I have sat above the nest of the Duck Hawk and watched the daily life of the birds through powerful binoculars, and identified the birds that were brought in for the young. In every case I feel sure that I could have gathered much data on the amount of food administered to the youngsters had I given my attention to that phase of the subject. I think, also, that I



BLUEBIRDS WITH FOOD.

PHOTO BY A. R. CAHN

could have determined many of the more familiar insects with some certainty, though not with that degree of certainty an expert entomologist would were he examining the remains under a microscope. As it was, my attention was given to photographing the home life of the birds, and particularly of the parents, which brings me to the suggestion I would offer.

As long as we admit that field observations are not carried on with the idea of determining the specific food, I would suggest the use of the camera as an amount determinant,—

ROBIN FEEDING WITH FOOD MASSED IN THE BILL.

PHOTO BY A. R. CAHN

not that I would leave it to the camera to determine the amount of food administered; I would use the camera as a check upon the observations made. There are few of our common birds that will not eventually become reconciled to the presence of a camera either artfully concealed or without any attempt at concealment placed three or four feet from the nestlings. If the birds object to the presence of the observ-

er, the undesirable party may withdraw, and operate the camera by means of a thread, watching the birds through a field glass, and taking the picture at the psychological moment. Why not let the cyclopic eye of the camera verify the observations on the amount of food given the young? I admit that I have not tried this out, but I find in looking over my negatives that I have quite a number of photographs showing the parent with a definite amount of food in the bill, and I think that possibly very definite results might be obtained after a little experience, if the object were kept in mind. To illustrate my point I offer the photographs accompanying this note. Whether these will show as clearly in print as they do on lantern slides is very doubtful indeed, but the slides, when projected on a screen, show the food in great detail, so that it may be roughly identified.

A FLIGHT OF SHORE-BIRDS NEAR YOUNGSTOWN, OHIO.

BY JOHN P. YOUNG.

Near North Lima, Mahoning County, Ohio, there is a reservoir of about 400 acres area, made by damming the outlet of an old tamarack swamp. Many water birds stop at this lake in the migrations, and this article is written to tell of a heavy migration of shore-birds which occurred on August 10 and 11, 1914.

Our first visit to the lake after the return of the shore-birds was on July 27th, when we found Pectoral, Least, Semipalmated and Solitary Sandpipers, Wilson's Snipe, Great Blue Heron and Black Tern. On August 3, in addition to the above, we found the Semipalmated Plover, Yellow-legs, and Dowitcher.

On August 10 and 11 there were many shore-birds of the common kinds, and in addition we saw 4 Western Willets, 4 Dowitchers, one Western Sandpiper, one White-rumped Sandpiper, one Greater Yellow-legs, 2 Red-backed Sandpipers, also the Common Tern. On these days there were

many more shore-birds than there have been any day since, so far as we know from our rather frequent visits.

The Western Willets seen were the first we have recorded, and they were still there August 13th. The Dowitchers were not seen after the 11th.

The Western Sandpiper seemed to like the surroundings, as we saw it there for almost two weeks, presumably the same bird. It was found with the Least and Semipalmated Sandpipers, and in the opinion of Mr. Fordyce, and myself, was easily recognizable by the long bill. (This is the first record for the Western Sandpiper *Ereunetes mauri* for Ohio. The fact that the species occurs on the Atlantic coast during the southward migration, and is more or less regular in Missouri, Iowa, and Wisconsin, would make its occurrence in Ohio casual rather than accidental. Ed.)

The White-rumped Sandpiper was seen on August 10 and 11, and on October 29, and was quite tame. It would remain on the shore after the other birds had flown from the approaching observer. On one occasion I got within fifteen feet of it before it flushed. When it did fly it showed the white rump very plainly, but even when feeding it was rather easily differentiated from Pectorals and other sandpipers with which it was associated.

The appearance of the Red-backed Sandpipers and the Greater Yellow-legs was unusually early according to our records.

On August 13 the larger part of these birds had disappeared, and since that time no unusually large flights have been seen, though the Sanderling, Black-bellied Plover, and Golden Plover have come along in due time. Only one Sanderling has been seen, as our beaches are not very sandy. The Black-bellied Plover has been more numerous this year than before, and four or five individuals have been seen at frequent intervals.

The following extract from the Journal of Mr. W. E. Clyde Todd, may throw some light upon this remarkable flight:

"Great Whale River, Hudson Bay, Aug. 7, 1914.—Heavy

storm of wind and rain from the west, the worst I have ever seen in this country. Worked on our birds all morning and in the afternoon went out along the beach to the mouth of the river, and thence northward to where the sandy beach gave way to a rocky ridge. The wind nearly blew me off my feet and birds were naturally very scarce."

We believe that the Wood Duck bred in the swamp at the lower end of this reservoir, as they were seen a number of times during August and September. On September 3 we saw 13 of them.

CORRECTIONS OF THE A. O. U. CHECKLIST IN REGARD TO BIRDS OF OHIO.

BY W. F. HENNINGER.

When the writer reviewed the last A. O. U. Checklist in the Wilson Bulletin, Sept., Dec., No. 1910, pp. 198–199 he made the statement that evidently neither the pages of the Wilson Bulletin nor any Ohio ornithologist had been consulted by the authors, who worked out the geographical ranges of the birds, as otherwise errors and omissions concerning this state would not be found so frequently in it. Some time later on a similar statement was made concerning another state in the columns of the Auk. Thereupon the writer corresponded with the editor of the "Auk" concerning Ohio birds and sent a complete list of the changes that should be made. A long time has since elapsed during which the writer expected the list to appear in the Auk as that was the impression he got from this correspondence, but as this was never done he thinks it is time that the correct records appear in print so that any one can change his checklist accordingly. They are herewith appended; and one glance will suffice to show how incomplete the checklist is without them as far as the status of many birds is concerned in Ohio and this no doubt will be true in regard to other states.

1. *Gavia immer.*—Does not breed in Ohio. (Jones, Wils. Bull., June, 1909, p. 68.)

2. *Stercorarius pomarinus.*—Casual in Ohio. (Jones, Cat. Ohio Birds, p. 26.)

3. *Sterna antillarum.*—Occurs in Ohio. (Jones, Cat. Ohio Birds, p. 33.)

4. *Oceanites oceanicus.*—Accidental in Ohio. (Henninger, Auk, 1907, p. 447.)

5. *Anhinga anhinga.*—Accidental in Ohio. (Jones, Wils. Bull., June, 1905, p. 64.)

6. *Anas platyrhynchus.*—Breeds in Ohio. (Wils. Bull., Dec. 1912, and other records.)

7. *Oidemia perspicillata.*—Accidental in Ohio. (Jones, Wils. Bull., Dec. 1908, p. 210.)

8. *Branta canadensis.*—Winters regularly in Southern Ohio. (Henninger, Wils. Bull., Sept. 1902, p. 80.)

9. *Branta bernicla glaucogastra.*—Rare in Ohio. (Jones and Fisher, Wils. Bull., Dec. 1908, p. 210.)

10. *Plegadis autumnalis.*—Casual north to Ohio. (Jones, Cat. Ohio Birds, p. 216.)

11. *Ixobrychus neoxenus.*—Rare in Ohio. (Jones, Wils. Bull., March, 1908, p. 50 and Auk, 1907, p. 338.)

12. *Herodias egretta.*—Casual north to Ohio. (Jones, Cat. Ohio Birds, p. 54.)

13. *Egretta candidissima.*—Casual in Ohio. (Jones, Cat. Ohio Birds, p. 55.)

14. *Florida caerulea.*—Wanders rather regularly to Ohio. (Henninger, Auk, Jan. 1910, p. 66, Dawson's Birds of Ohio, and Jones, Cat. Ohio Birds, p. 55.)

15. *Grus mexicana.*—Still breeds in Ohio. (Several records published and unpublished.)

16. *Coturnicops noveboracensis.*—Breeds in Ohio. (Jones, Cat. Ohio Birds.) Set of eggs taken by Dr. B. R. Bales of Circleville, Ohio, identified in 1909 at Smithsonian Institution. (Apologies due Dr. Bales.)

17. *Ionornis martinica.*—Irregularly north to Ohio in summer. (Jones, Cat. Ohio Birds, p. 61 and Dawson's Birds of Ohio.)

18. *Recurvirostra americana.*—Accidental in Ohio. (Jones, Cat. Ohio Birds, p. 64.)

19. *Himantopus mexicanus.*—Accidental in Ohio. (Jones, Cat. Ohio Birds, p. 64.)

20. *Gallinago delicata.*—Winters north locally to Ohio. (Jones, Cat. Ohio Birds, p. 67.)

21. *Macrorhamphus griseus scolopaceus.*—Rare migrant in Ohio. (Jones, Cat. O. B., p. 68.)

22. *Pisobia bairdi.*—Irregular migrant in Ohio. (Wheaton, Jones, Henninger and Wils. Bull., Sept. 1909, p. 126.)

23. *Catoptrophorus semipalmatus inornatus.*—Accidental in Ohio. (Jones, Wils. Bull., Dec. 1906, p. 131, and Wils. Bull., Sept 1909, p. 129.)

24. *Machetes pugnax.*—Strays to Ohio. (Wheaton, Jones, Cat. O. B., p. 317, and Dawson's Birds of Ohio, p. 527.)

25. *Elanoides forficatus.*—Accidentally north to Ohio. (Jones, Cat. O. B., p. 88, and others.)

26. *Astur atricapillus.*—Winters south to northern Ohio. (Dawson, Birds of Ohio.)

27. *Buteo borcalis calurus.*—Accidental in Ohio. (Jones, Cat. O. B., p. 217, and Henninger, Wils. Bull., Sept. 1912, p. 156), the latter record since the publication of the checklist added for the sake of completeness.)

28. *Falco rusticolus.*—Accidental in Ohio. (Henninger, Wils. Bull., March, 1911, p. 58.) Added for the sake of completeness.

29. *Asio flammeus.*—Breeds in Ohio. (Wheaton and lately Dr. Bales.)

30. *Cryptoglaux acadica.*—Breeds in Ohio. (Dawson's Birds of Ohio.)

31. *Dryobates borealis.*—Casually to Central Ohio. (Jones, Cat. O. B., p. 218, and also Dawson's Birds of Ohio.)

32. *Antrostomus carolinensis.*—Does not occur in Ohio at all. The writer would like to see the Biological Survey furnish the proof (printed or otherwise) that the Chuck-wills-widow breeds in Ohio.

33. *Muscivora forficata.*—Accidental in Ohio. (Jones, Cat. O. B. and Wils. Bull., June, 1905, p. 64.)

34. *Empidonax traillii alnorum.*—All Ohio birds are *alnorum* and not *traillii* proper. (Jones, Wils. Bull., March, 1908, p. 51.)

35. *Xanthocephalus xanthocephalus.*—Casual in Ohio. (Jones, Cat. O. B., p. 218.)

36. *Pinicola enucleator leucura.*—Winters south to Ohio. (Jones, Cat. O. B., p. 136 and 137, and Wils. Bull., March, 1910, p. 35.)

37. *Calcarius pictus.*—Accidental in Ohio. (Wils. Bull., Sept. 1904, p. 85.)

38. *Passerherbulus lecontei.*—Accidental in Ohio. (Wils. Bull., March, 1907, p. 20.)

39. *Passerherbulus nelsoni.*—Accidental in Ohio. (Jones, Cat Ohio Birds, p. 145.)

40. *Melospiza georgiana.*—Breeds in Ohio. (Jones, Cat. Ohio Birds, p. 152.) Since then found breeding in Ohio, but record not published.

41. *Oporornis formosa.*—Add to breeding area, "from Southern and Eastern Ohio."

Since then Prof. Jones has found the White-throated Sparrow (*Zonotrichia albicollis*) breeding in Ohio, in two successive seasons, which should also be added to the check list.

NINETEEN YEARS OF BIRD MIGRATION AT OBERLIN, OHIO.

BY LYNDS JONES.

Migration studies have been carried on at Oberlin for upwards of twenty-five years, but there seem to be good reasons for limiting this record to the years since 1895. The data have not been presented before in this complete form because, in the opinion of the writer, the records were not sufficiently numerous to furnish a reliable table for the use of those who may wish to continue these studies.

For the first six years the territory covered lay almost wholly within Lorain county, extending from about five miles south of Oberlin to the shore of Lake Erie, and east and west from Oberlin about five miles, comprising a territory seventeen miles north and south by ten miles east and west. In this area, all of which was originally virgin forest, there are two river valleys extending in a northerly direction, extensive open fields, remnants of the original forest, brushy tangles where the dumps of abandoned sandstone quarries have been overgrown, and the lake shore with its considerable marshy areas at the mouths of streams. There are no elevations of importance. The two river valleys now have slender remnants of once considerable growth of white pine and red cedar, with islands of hemlock.

Since 1900 operations have been extended to include the Cedar Point sand pit with the adjacent extensive marshes and lake shore, and the narrow area bordering the road between Berlin Heights and the lake shore at Ceylon Junction, and also the mouth of Old Woman's Creek, the lower reaches of which are extensively marshy. Perhaps it would have been

better to separate the records from this distinctively different region from those of the definitely Oberlin region, but that could not be done without danger of serious mistakes. The Cedar Point sand pit records are mainly those of water birds, at least as they affect the appended tables. Some land birds tarry there later in the spring than they have been found in the Oberlin region.

I have no hesitation in saying that the percentage of error in these records must be small, because observations have been carried on almost every day during the season of migration, and for weeks before any migration began and for three weeks after it closed, and by a considerable body of trained observers. Questionable records have been eliminated.

Since the Crow, Robin, Bluebird, Meadowlark, Northern Flicker, Bronzed Grackle, and Mourning Dove regularly remain all winter in small numbers, the exact arrival of the first migrating individuals may not have been determined with certainty in every instance, but the migration of these species has been considered as begun with the advent of a considerable number of individuals who were singing and evidently individuals which had not remained in the region all winter.

The writer is well aware of the fact that averages based upon few records are of questionable value. Nearly all of the species which have been recorded as migrants are here given for the sake of completeness, with no thought that averages based on as few as nine records can be taken as true averages.

The median rather than the average date of arrival has been used in these tables, because the median has proved the more reliable in practice. Extremes in either earliest arrivals or latest records of species which pass north to breed do not affect the median as they do the average.

The species are arranged according to their average date of arrival as a matter of convenience for further studies of the migrations rather than according to the systematic arrangement of the A. O. U. Check-List. If this arrangement

be objected to on the ground that it is inconvenient to find any species because it is out of alignment with the Check-List, one would answer that the purpose of this paper is not to show the systematic relationships, but rather groupings according to times of migration. Even if it were possible, in any list arranged according to taxonomic relationships, to show those relationships accurately, which is avowedly impossible, the inconvenience of such a list when used in almost any sort of field work is considerable, so considerable that some other arrangement must often be devised. The only general utility arrangement is the alphabetical one.

Where the records are less than twelve in number it is likely that additional records covering a number of years will change the date here given as the median. In such cases, then, this paper claims only to give a basis upon which further work may be done. It is entirely possible that any of the dates given here as first seen may be moved forward by later records. They are of value only in showing what the range of variation may be, and also in showing that the birds are held back by a backward spring, and encouraged to move northward early in an early spring.

It will be noted that there is very marked disagreement in the dates of "Last seen." The irregularity is rather more marked among the water birds than among the land birds. The very late date of the Mallard in 1904 possibly indicates that the pair seen was breeding, although no nest was found. Color is lent to this supposition by the finding of a female Mallard in the marshes of Bay Point on the last day of June, 1914. The case of the Olive-backed Thrush (June 13, 1905) cannot be explained in this way. The single individual seen did not seem to be abnormal. There is a strong suspicion that the single Semipalmated Plover recorded on June 17, 1904, was a wounded bird. It flew without difficulty when approached too closely, but permitted an approach within five feet. The other June records are not particularly notable, since my records show a considerable number of early June "lists" for transient species.

The average variation between first arrivals (earliest and latest) for all of the species here listed is 21 days. The average variation of first arrivals of the water birds is 33 days, and of the land birds 20 days. The variation in the land birds which remain to breed is 20 days, of the transient species is 19 days. The land bird with the least variation is the Black-throated Green Warbler with 8 days, and the greatest variation is the Pipit, with a variation of 66 days. It is likely that the regular route of migration of the Pipit does not cross this region, since only occasional scattered flocks are found. The March 15, 1901, record is my own. There were two birds, one of which was secured for positive identification.

	Number Records	Median First Seen	Earliest Record	Median Last Seen	Latest Laggard
Crow	19	Feb. 28;	Feb. 11, '98; Breeds		
Robin	19	Feb. 28;	Feb. 14, '14; Breeds		
Killdeer	19	Mar. 1;	Feb. 18, '12; Breeds		
Bluebird	19	Mar. 1;	Feb. 16, '11; Breeds		
Canada Goose	14	Mar. 6;	Feb. 19, '13	Apr. 1;	Apr. 15, '07
Meadowlark	18	Mar. 6;	Feb. 22, '13; Breeds		
Bronzed Grackle	19	Mar. 6;	Feb. 15, '12; Breeds		
Song Sparrow	19	Mar. 6;	Feb. 26, '06; Breeds		
Northern Flicker	17	Mar. 7;	Feb. 26, '06; Breeds		
Red-winged Blackbird	19	Mar. 8;	Feb. 26, '13; Breeds		
Black Duck	11	Mar. 14;	Feb. 22, '06	Apr. 4;	Apr. 15, '99
Baldpate	9	Mar. 14;	Mar. 9, '08	May 10;	May 27, '07
Redhead	8	Mar. 15;	Mar. 9, '08		Apr. 21, '03
Mourning Dove	14	Mar. 15;	Mar. 11, '07; Breeds		
Migrant Shrike	19	Mar. 15;	Mar. 2, '01; Breeds		
Canvas-back	7	Mar. 17;	Mar. 13, '03	Apr. 1;	Apr. 10, '05
Cowbird	19	Mar. 17;	Mar. 9. '10; Breeds		
Rusty Blackbird	19	Mar. 17;	Mar. 5, '10	May 8;	May 16, '08
Towhee	19	Mar. 17;	Mar. 6, '99; Breeds		
Pintail	10	Mar. 18;	Feb. 22, '09	Apr. 20;	Apr. 29, '07
Whistling Swan	5	Mar. 18;	Mar. 14, '04		Apr. 3, '99
Greater Scaup Duck	11	Mar. 19;	Mar. 2, '04	Apr. 19	
Field Sparrow	19	Mar. 19;	Mar. 12, '98; Breeds		
Mallard	12	Mar. 20;	Mar. 5, '06	Apr. 10;	Jun. 17, '04
Fox Sparrow	19	Mar. 20;	Mar. 5, '10	Apr. 21;	May 2, '07
Red-breasted Merganser	11	Mar. 21;	Mar. 15, '09	Apr. 30;	May 22, '09
Belted Kingfisher	19	Mar. 22;	Mar. 11, '10; Breeds		
Phoebe	19	Mar. 22;	Mar. 5, '05; Breeds		
Merganser	5	Mar. 23;	Feb. 22, '06		May 10, '12
Turkey Vulture	18	Mar. 24;	Mar. 11, '08; Breeds		
Vesper Sparrow	19	Mar. 25;	Mar. 16, '03; Breeds		
Wilson's Snipe	19	Mar. 27;	Mar. 15, '03	May 3;	May 22, '09
Chipping Sparrow	19	Mar. 30;	Mar. 21, '10; Breeds		
Shoveller	8	Mar. 31;	Mar. 18, '07		Apr. 21, '14
Lesser Scaup Duck	16	Mar. 31;	Mar. 9, '08; Breeds		

	Number Records	Median First Seen	Earliest Record	Median Last Seen	Latest Laggard
Coot	14	Mar. 31;	Mar. 9, '08	May 5;	May 22, '09
Woodcock	18	Mar. 31;	Mar. 10, '02; Breeds		
Swamp Sparrow	18	Mar. 31;	Mar. '13, '08; Breeds		
Hermit Thrush	19	Apr. 2;	Mar. 21, '03	May 8;	May 26, '10
Pied-billed Grebe	18	Apr. 3;	Mar. 16, '07	May 6;	May 28, '04
Hooded Merganser	7	Apr. 3;	Mar. 11, '11	Apr. 20;	Apr. 30, '11
Great Blue Heron	18	Apr. 5;	Mar. 20, '97; Breeds		
Brown Thrasher	19	Apr. 5;	Mar. 22, '02; Breeds		
Pectoral Sandpiper	13	Apr. 6;	Mar. 30, '10	May 2;	May 11, '07
Yellow-bellied Sapsucker	19	Apr. 6;	Mar. 23, '10	May 9;	May 30, '11
Bufflehead	14	Apr. 8;	Mar. 15, '09	Apr. 26;	May 13, '07
Purple Martin	19	Apr. 9;	Mar. 25, '10; Breeds		
Bittern	12	Apr. 10;	Mar. 25, '10; Breeds		
Barn Swallow	19	Apr. 11;	Mar. 30, '07; Breeds		
Blue-winged Teal	12	Apr. 12;	Mar. 22, '13; Breeds		
Ruby-crowned Kinglet	19	Apr. 12;	Mar. 25, '05	May 12;	May 24, '10
Tree Swallow	18	Apr. 12;	Mar. 31, '10; Breeds		
Upland Plover	19	Apr. 13;	Mar. 22, '04; Breeds		
Bonaparte's Gull	14	Apr. 14;	Mar. 31, '13	May 20;	May 22, '11
Ruddy Duck	11	Apr. 14;	Mar. 26, '07	May 10;	May 13, '02
Horned Grebe	13	Apr. 16;	Mar. 24, '14	Apr. 29;	May 17, '08
Osprey	11	Apr. 16;	Apr. 5, '08; Breeds		
White-throated Sparrow	19	Apr. 16;	Mar. 21, '03	May 18;	May 22, '09
Louisiana Water-Thrush	19	Apr. 16;	Mar. 28, '04; Breeds		
Loon	10	Apr. 17;	Mar. 19, '07	May 8;	May 21, '01
Spotted Sandpiper	18	Apr. 18;	Apr. 9, '04; Breeds		
Savanna Sparrow	13	Apr. 18;	Mar. 30, '12	May 12;	May 25, '06
Wood Duck	6	Apr. 19;	Mar. 23, '04; Breeds		
Chimney Swift	19	Apr. 19;	Apr. 10, '10; Breeds		
Greater Yellow-legs	13	Apr. 20;	Apr. 12, '10	May 12	
Myrtle Warbler	19	Apr. 20;	Mar. 26, '08	May 19;	May 27, '07
Blue-gray Gnatcatcher	19	Apr. 20;	Mar. 29, '07; Breeds		
Bank Swallow	18	Apr. 22;	Apr. 6, '02; Breeds		
Green Heron	17	Apr. 23;	Apr. 6, '13; Breeds		
Yellow Warbler	19	Apr. 24;	Apr. 11, '08; Breeds		
Grasshopper Sparrow	19	Apr. 25;	Apr. 10, '10; Breeds		
House Wren	19	Apr. 25;	Apr. 17, '96; Breeds		
Rough-winged Swallow	17	Apr. 26;	Apr. 16, '02; Breeds		
Solitary Sandpiper	18	Apr. 27;	Apr. 18, '09	May 17;	May 25, '03
Bobolink	19	Apr. 27;	Apr. 16, '04; Breeds		
Warbling Vireo	19	Apr. 27;	Apr. 17, '96; Breeds		
Oven-bird	19	Apr. 27;	Apr. 22, '99; Breeds		
Catbird	19	Apr. 27;	Apr. 19, '13; Breeds		
Long-billed Marsh Wren	17	Apr. 27;	Apr. 16, '06; Breeds		
Olive-backed Thrush	19	Apr. 27;	Apr. 13, '08	May 25;	Jun. 13, '05
Cliff Swallow	19	Apr. 27;	Apr. 6, '03; Breeds		
Wood Thrush	19	Apr. 27;	Apr. 10, '04; Breeds		
Red-headed Woodpecker	19	Apr. 28;	Apr. 13, '10; Breeds		
Kingbird	19	Apr. 28;	Apr. 19, '14; Breeds		
Baltimore Oriole	19	Apr. 28;	Apr. 14, '05; Breeds		
Lark Sparrow	10	Apr. 28;			
Blue-headed Vireo	17	Apr. 28;	Apr. 17, '02	May 16;	May 22, '07
Black and White Warbler	19	Apr. 28;	Apr. 19, '14; Breeds		

	Number Records	Median First Seen	Earliest Record	Median Last Seen	Latest Laggard
Blue-winged Warbler	19	Apr. 28;	Apr. 19, '14; Breeds		
Henslow's Sparrow	5	Apr. 29;	Apr. 22, '07; Breeds		
Black-thr. Green Warbler	19	Apr. 29;	Apr. 25, '96	May 22;	May 28, '07
Palm Warbler	16	Apr. 29;	Apr. 20, '08	May 16;	May 22, '09
Yellow-legs	12	Apr. 30;	Apr. 1, '12	May 13;	May 19, '03
Red-eyed Vireo	19	Apr. 30;	Apr. 27, '06; Breeds		
Maryland Yellow-throat	19	Apr. 30;	Apr. 19, '14; Breeds		
Sora	17	May 1;	Apr. 11, '08; Breeds		
Crested Flycatcher	19	May 1;	Apr. 24, '13; Breeds		
Scarlet Tanager	19	May 1;	Apr. 24, '13; Breeds		
Nashville Warbler	19	May 1;	Apr. 27, '14	May 21;	May 27, '01
Water-Thrush	16	May 1;	Apr. 24, '13	May 20;	May 25, '03
Redstart	19	May 1;	Apr. 25, '12; Breeds		
Veery	18	May 1;	Apr. 20, '99; Breeds		
Virginia Rail	19	May 2;	Apr. 14, '13; Breeds		
White-crowned Sparrow	19	May 2;	Apr. 21, '11	May 19;	May 22, '09
Rose-breasted Grosbeak	18	May 2;	Apr. 27, '96; Breeds		
Yellow-throated Vireo	19	May 2;	Apr. 20, '14; Breeds		
Orange-crowned Warbler	13	May 2;	Apr. 26, '09	May 14;	May 22, '09
Least Flycatcher	19	May 3;	Apr. 11, '03	May 24;	Jun. 3, '10
Florida Gallinule	9	May 4;	Apr. 20, '07; Breeds		
Orchard Oriole	18	May 4;	Apr. 29, '99; Breeds		
Cerulean Warbler	19	May 4;	Apr. 29, '99; Breeds		
Black-thr. Blue Warbler	19	May 4;	Apr. 27, '96	May 22;	May 29, '01
Chestnut-sided Warbler	17	May 4;	Apr. 30, '06	May 23;	May 27, '07
Whip-poor-will	16	May 5;	Apr. 19, '14; Breeds		
Indigo Bunting	19	May 5;	Apr. 26. '02; Breeds		
Northern Parula Warbler	13	May 5;	May 1, '00; Breeds		
Magnolia Warbler	18	May 5;	Apr. 28, '96	May 22;	May 28, '08
Short-billed Marsh Wren	7	May 5;	Apr. 30, '06; Breeds		
Pipit	17	May 6;	Mar. 15, '01	May 16;	May 26, '99
Pine Warbler	6	May 6;	Apr. 29, '98	May 13;	May 15, '14
Blackburnian Warbler	18	May 6;	Apr. 27, '05	May 22;	May 29,'09
Kirtland's Warbler	3	May 6;	May 2, '06		
Common Tern	14	May 7;	Apr. 29, '07; Breeds near		
Least Bittern	9	May 7;	Apr. 25, '04; Breeds		
King Rail	9	May 7;	May 4, '08; Breeds		
Wood Pewee	19	May 7;	May 2, '99; Breeds		
Yellow-breasted Chat	19	May 7;	May 1, '03; Breeds		
Gray-cheeked Thrush	14	May 7;	Apr. 29, '99	May 22;	May 29, '09
Philadelphia Vireo	8	May 8;	Apr. 29, '07	May 20;	May 27, '07
Golden-winged Warbler	8	May 8;	May 4, '02	May 14;	May 23, '05
Prothonotary Warbler	5	May 8;	Apr. 27, '13; Breeds		
Acadian Flycatcher	18	May 9;	May 3, '13; Breeds		
Dickcissel	7	May 9;	May 6, '96; Breeds		
Lincoln's Sparrow	12	May 9;	Apr. 14, '12	May 14;	May 23, '04
Hooded Warbler	12	May 9;	Apr. 22, '14; Breeds		
Yellow-billed Cuckoo	17	May 10;	May 6, '99; Breeds		
Kentucky Warbler	8	May 10;	Apr. 27, '04		
Tennessee Warbler	17	May 10;	May 1, '13	May 22;	May 30, '13
Bay-breasted Warbler	18	May 10;	May 4, '02	May 21;	May 28, '07
Canada Warbler	18	May 10;	Apr. 28, '96	May 22;	Jun. 3, '10
Cape May Warbler	12	May 10;	Apr. 27, '14	May 16;	May 27, '07

	Number Records	Median First Seen	Earliest Record	Median Last Seen	Latest Laggard
Connecticut Warbler	9	May 10;	May 3, '14	May 25;	May 29, '12
Black Tern	12	May 11;	May 2, '07; Breeds		
Black-billed Cuckoo	18	May 11;	May 4, '14; Breeds		
Ruby-thr. Hummingbird	19	May 11;	May 2, '06; Breeds		
Prairie Warbler	9	May 11;	Apr. 29, '99	May 17;	May 20, '07
Mourning Warbler	15	May 11;	May 3, '14	May 25;	Jun. 2, '13
Least Sandpiper	10	May 12;	May 4, '14	May 16;	May 22, '10
Nighthawk	17	May 12;	Apr. 21, '09; Breeds		
Black-poll Warbler	18	May 12;	May 4, '06	May 24;	Jun. 3, '04
Semipalmated Plover	5	May 13;	May 11, '12	May 25;	Jun. 17, '04
Yellow-bellied Flycatcher	4	May 13;	May 9, '04	May 26;	Jun. 1, '14
Wilson's Warbler	14	May 13;	May 5, '00	May 25;	Jun. 3, '10
Red-backed Sandpiper	4	May 14;		May 17;	May 20, '10
Alder Flycatcher	19	May 14;	May 7, '02; Breeds		
Olive-sided Flycatcher	5	May 14;	Apr. 29, '13	May 27;	Jun. 1, '14
Ruddy Turnstone	10	May 18;	Mar. 31, '12	May 28;	Jun. 1, '14
Semipalmated Sandpiper	5	May 20;	May 16, '03	May 23;	Jun. 1, '14

THE FOLLOWING SPECIES ARE WINTER RESIDENTS:

Brown Creeper	17		Apr. 28; May 24, '10
Tree Sparrow	19		Apr. 29; May 9, '09
Golden-crowned Kinglet	16		Apr. 30; May 11, '09
Slate-colored Junco	18		May 1; May 20, '07
Purple Finch	16		May 2; May 28, '07
Winter Wren	18		May 8; May 17, '98
Red-breasted Nuthatch	12		May 13; May 28, '07
Pine Siskin	7		May 13; May 20, '07
Horned Lark			Apr. 1, '99
Northern Shrike			Apr. 3, '99
Snowflake			Mar. 16, '08

The following species have been recorded, but the records are either too few or too irregular to be of any value for reference. They need particular attention. The species are arranged alphabetically.

Chickadee, Carolina
Cormorant, Double-crested
Crossbill, White-winged
Curlew, Hudsonian
Dowitcher
Duck, Ring-necked
Eagle, Golden
Gadwall
Golden-eye
Golden-eye, Barrow's
Goose, Blue
Goose, Snow
Goose, White-fronted
Goshawk
Grosbeak, Evening
Grosbeak, Pine
Hawk, Duck
Hawk, Rough-legged
Knot
Lark, Hoyt's Horned
Longspur, Lapland
Mockingbird
Murre, Brunnich's
Owl, Saw-whet

Owl, Short-eared
Owl, Snowy
Phalarope, Wilson's
Plover, Black-bellied
Plover, Golden
Plover, Piping
Sandpiper, Baird's
Sandpiper's, Stilt
Sparrow, Bachman's
Sparrow, Nelson's
Teal, Green-winged
Tern, Caspian
Vireo, White-eyed
Warbler, Worm-eating
Waxwing, Bohemian
Willet, Western
Wren, Bewick's

The Red-Crossbill is too irregular to be placed in any group. It is sometimes found every month in the year, but often absent.

The Herring and Ring-billed Gulls are present all the year, but do not breed in the vicinity, of course. The departure in spring of the birds which breed during the season cannot, therefore, be ascertained with any degree of accuracy.

The following species are regular residents: Alphabetically arranged.

Bob-white
Cardinal
Chickadee
Eagle, Bald
Goldfinch
Grouse, Ruffed (scarce)
Hawk, Cooper's
Hawk, Marsh
Hawk, Pigeon
Hawk, Red-shouldered
Hawk, Red-tailed
Hawk, Sharp-shinned
Hawk, Sparrow
Hawk, Broad-winged
Jay, Blue
Lark, Prairie Horned
Nuthatch, White-breasted
Owl, Barn
Owl, Barred
Owl, Great Horned
Owl, Long-eared
Owl, Screech
Titmouse, Tufted
Waxwing, Cedar
Woodpecker, Downy
Woodpecker, Hairy
Woodpecker, Red-bellied
Wren, Carolina

DISCOURAGING THE ENGLISH SPARROW.

BY THOMAS H. WHITNEY.

For nearly two years I have spent a good deal of leisure time on the almost hopeless task of ridding my home grounds of the English sparrow. Having tried nearly all the methods I could think of or read about that promised any practical results, in the hope my experience may be of some little value to others, I venture to describe it briefly.

The sparrow problem naturally divides itself into three parts: Destruction, Prevention of Increase, Protecting Food Supplied to Native Birds.

DESTRUCTION.

In the twenty months elapsed since I began work, I have killed 216 sparrows. Not a very large number, but ours is a small inland city which does not harbor any big flocks in the upper residence districts, the sparrows being rather evenly distributed a few to a place, as nesting and roosting are convenient. Those formerly resident in our grounds have long since been killed, and the great majority of those destroyed were new-comers in search of food or un-preempted home-sites. The total number killed is divided as follows:

Poisoned by strychnine-coated wheat	13
Shot with air-rifle	10
Shot with .22 cal. rifle	31
Caught in wire funnel trap	13
Caught in nest box trap	137
Total	216

There are practical difficulties in the use of poison, the principal one that of limiting the poisoned bait to sparrows only. I have a fresh supply of poisoned wheat made up for use this winter, but juncoes linger, and would probably be killed with the sparrows. Better a whole flock of sparrows than the unnecessary death of one native bird.

It is only occasionally that a bird can be killed or even in-

jured with an air-rifle, irrespective of marksmanship, as the shooting quality of the ordinary air-gun is very unreliable.

In my judgment the best gun for shooting sparrows in towns is the .22 calibre rifle, using shot cartridges, and to be equipped with a silencer; it is then practically noiseless, and almost certain to drop the bird if fired from a reasonable distance. When shot at irregularly and with this gun, sparrows do not become especially "gun-shy," as they certainly will if hunted in the ordinary way. Shooting, however, is usually against the ordinances of towns and cities, and apt to be dangerous, no matter how much care is exercised. Moreover, little impression can be made in this particular way, on the large numbers of sparrows always present in towns.

The ordinary funnel wire trap such as advertised extensively of late by various bird supply houses, I have tried out thoroughly, and found wanting. It will catch a few birds the first time or two of setting,— after that the sparrows will not enter, no matter how carefully the bait is placed, and irrespective of moving the trap to different locations. Where localities are over-run with large flocks of sparrows, a funnel trap will at first catch a good many, but the fact remains that they will not enter it after a few days, and further setting is useless.

It will be noted that more than 50% of the sparrows killed have been caught in a nest box trap. This kind of trap is fully described in the U. S. Farmer's Bulletin "The English Sparrow as a Pest." All the time I have been trying to shoot, poison, and trap sparrows by other means, this nest box trap has been steadily reducing their numbers, in all sorts of weather, and in all seasons of the year; it makes no difference when the bird arrives, the trap is ready and there is no escape. A thousand nest box traps put in commission throughout the country, would take their annual toll of tens of thousands of sparrows, and if placed with discretion will catch few native birds.

Of all the methods I know, the nest box trap is by far the best; not only from the standpoint of actual results in my

experience, but because it affords a really constant menace to the sparrows. Poisoning, shooting and trapping by other means are effective only when attended to by some one. The nest box trap, once put up, is always set, and if the receiving sack be fairly large, needs visiting only once or twice a season, though common humanity will direct attention to it at frequent intervals to prevent unnecessary cruelty.

PREVENTION OF INCREASE.

Sparrows are not allowed to roost anywhere on our premisis; at intervals of not more than a few days, we make the rounds of the house and grounds, and by poking with a fish pole in corners and above windows, and shaking vines and awnings, any birds present are driven off; if disturbed more than once, the same birds will not return. This undoubtedly discourages to a large extent any attempt to build in these places.

Boxes made of boards are put up only for wrens, the hole being made too small for sparrows. Any board box containing an ordinary sized hole, and especially if fitted with a perch or ledge, will certainly be occupied by sparrows and not a chance afforded the birds for which it was erected.

Several boxes in the von Berplesch style hung on our trees have been successfully occupied by wood-peckers, and are now in use by nuthatches and possibly chickadees as winter quarters. Early last spring the sparrows reconnoitered nearly all of these boxes, but made no attempt to occupy them and have not annoyed the rightful tenants. It may be too soon to be sure, but indications point strongly to the immunity of this style of nest boxes from occupation by the sparrows. If this is so, they certainly deserve a wide sale.

Our martin house has to be carefully watched, even for some time after arrival of the martins. At least one pair of sparrows will be allowed to rear broods without objection by the martins, and it has been necessary each spring to climb up several times and tear out nests. If the owner of a martin house is not persistently watchful, young sparrows will be

reared amidst the martins without his knowledge, as the parents develop astonishing cunning in concealing the presence of the family.

Once in a while some one writes that he does not let any sparrows nest in his yard. All praise to those who pursue this laudable ambition. "No sparrows nests" ought to be the slogan of every member of the Wilson Club, and every one else who takes an interest in our native birds.

PROTECTION OF FOOD SUPPLIES FOR NATIVE BIRDS.

I have tried out two of the best known winter feeding devices, one a self feeder attached to a tree, the other an expensive glass shelter with self feeding hopper for nuts, erected on an iron pole. The tree self-feeder was up only a short time till the sparrows began to frequent it, to the virtual exclusion of all others. Even when it contained food they did not want, the sparrows sat around anyway, and kept other birds at a distance. The glass shelter worked admirably last winter, and afforded the chickadees and a red breasted nuthatch plenty of dry food, and a sunny and shelterd place to rest. I thought the recommendation of its makers, that sparrows were afraid to enter, was justified; but alas, my fond expectations were dashed this fall by finding it the favorite resort of sparrows, who drove the returning chickadees away. Possibly it should not have been left standing all summer, and familiarity bred contempt. Any way, it has been taken in now, to be put up again later if there seems to be possibility of the sparrows forgetting it.

No attempt is now made to feed any of the hard billed or seed eating birds, as it seems to be impossible to prevent such food being monopolized by the sparrows. At present I am feeding sun-flower seeds in cloth pockets on the trunks of trees, and suet in mesh bags. Both these supplies are tacked or tied on the upright trunk, and all small nearby limbs or other projections that might serve as perches, are carefully cut away. Woodpeckers, nuthatches, chickadees and brown creepers have no difficulty in using these food supplies owing

to their ability to cling to the bark, the lack of which faculty prevents the sparrows from interfering.

In our part of Iowa, practically no seed eating birds are seen in towns during the winter. It is therefore not worth while to in effect invite the sparrows by putting out grain of any kind, especially as any such attempt is sure to be rendered valueless by the pugnacity and persistance of the sparrows, who will eat or waste all the food put out.

In conclusion, I believe I have demonstrated to my own satisfaction that sparrows can be successfully combated, by any one who can devote a small part of his spare time to the work. It requires energy and persistence, but it can be done.

In every locality, there needs to be a development of public sentiment to a point where many will be become interested enough to help. It is all well enough to talk and write about conserving our native birds, putting up nest boxes for them, etc., but in my humble opinion the crying need at present is an active campaign against the sparrow. If we will reduce the numbers of sparrows, native birds will certainly come in of themselves, and have a chance to survive the increase in towns and cities, which is denied them under present conditions.

Those of mature age can remember when the first visit of the snow birds was a welcome event of the early winter. When the lovely blue-birds, and vireos, and phoebes were about our yards in town all summer. How sad it is that all this is gone, perhaps forever, and we are compelled to listen to the incessant chirp of the alien sparrows, and witness their persecution of any hapless native birds that chance to stop even for a day, in their migration.

Lack of training and in doors occupation doubtless prevents many members of the Wilson Club, as well as myself, from following many lines of bird study we would enjoy; these must be left to others. But there is a line of work we can engage in, and one of the greatest importance, *The destruction of the English Sparrow.*

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EDITORIAL

The considerable delay of this number does not presage a like delay for the March number. Many things have conspired to bring about this delay, but they need not be enumerated. Suffice it to say that copy for the March issue is now ready.

Now that the annual meeting of the Wilson Ornithological Club has been sanctioned officially and is a settled event, as many members as possible should make definite plans to attend. It does not seem likely that the holiday season will prove to be a convenient time. President T. C. Stephens would be glad to have all members express their opinions in regard to the best time for the meeting. The editor favors the two days following Thanksgiving. What is your preference? Tell Stephens.

Notice is hereby given that membership dues are now payable. They should be sent to Treasurer P. B. Coffin, 3232 Groveland Avenue, Chicago, Ill. If members will heed this notice it will save the time of the Treasurer as well as save the expense of sending out notices.

FIELD NOTES

NESTING OF PROTHONOTARY WARBLER NEAR HURON, OHIO.

The prothonotary warbler was first seen by me, in Huron, on April 27, 1913, when one was found singing in an orchard, where it stayed until May 3. On May 4 one was found singing on the Cedar Point sandspit.

On May 22, 1914, one was found singing in town. It was seen nearly every day until June 7, when it disappeared. It appeared to be prospecting for a nest, as it would investigate holes in trees and even started carrying nesting material into a sprinkling can hanging on the back porch of a house. On May 31, besides the one in town, two others were heard singing at Rye Beach, about two miles west of Huron on Lake Erie. On June 14, two were found at Rye Beach in the willows and button bushes fringing the marsh. One was singing, but the other used only a scolding note. From their actions I suspected a nest, but was unable to find it. I searched on several occasions after that, but it was not until June 26 that I was successful. By watching the male bird it was found that he had a certain perch where he would sing at about fifteen minute intervals and that after singing he would occasionally drop down into the underbrush. Search near there finally flushed the female from the nest, which was situated in an old woodpecker hole in a stub of a button bush, about four feet from the ground. The nest was about four inches below the opening, was lined with grass and contained two quite heavily marked eggs.

The stub was part of a clump of bushes and in the spring was evidently surrounded by water, but at this time the water had dried up so as to leave the ground nearly dry. On June 28, I examined the nest again and found but one egg. Both birds were seen, but not close to the nest. On July 3 the nest was empty and the birds were not seen, but on July 9 I found the male singing about a hundred yards from the old nest. This was the last seen or heard of them. The eggs were probably taken by red squirrels, as there were numbers of these around.

This record extends the known breeding range of the species in Ohio north to Lake Erie, previous records being chiefly at St. Mary's reservoir and at Licking reservoir. H. G. MORSE.

BURROWING OWL BREEDING IN IOWA.

On September 20, 1914, seven members of the Sioux City Bird Club made a trip to a point about eight miles southeast of the city, to observe a small colony of Burrowing Owls. Three pairs of these owls have occupied holes, in which they have reared their young, in this pasture during the past summer. The owls have been coming to this locality for a number of years, during which time their habits have been observed closely by the boys on the farm. The holes occupied by the owls were probably originally dug by coyotes or other mammals. The birds have occupied the same holes from year to year. The holes are on the side of a hill — the northwest exposure. As we approached first one and then another started in flight, flying perhaps 300 yards before alighting again. The birds were very shy, and it was not possible to get close to them or to get a good view of them. The holes in which they have their nests are not deep, the boys say, they having dug out one or more of them. After entering the ground, the holes make a turn, and at the end, where the nest is located, is a cavity three or four feet in length. There is no evidence that any other animals except the owls occupy the holes. When the owls have young in the nests they are much bolder than at other times. When a dog belonging to the place would enter the holes he would be attacked by the old birds on the outside. At other times the owls would attack the dog while he was following the cattle through the pasture. The owls migrate for the winter, and will leave, according to their habit, about the first week in October. A. F. ALLEN.

NOTES FROM COLUMBIANA, OHIO.

An incomplete census of nesting birds within sight from the porches of our house shows nests (or sites of nests not plainly visible) of the following: One pair of Oven-birds, one of Red-eyed Vireos, one of Scarlet Tanagers, one of Wood Pewees (on a limb in a maple within thirty feet from a window!), one of Phœbes, one of Flickers, one of Bluebirds, one of House Wrens, one of Chipping Sparrows, one of Song Sparrows, one of Catbirds, and four of Robins. I am quite certain that continued searching would have revealed the nests of Indigo Buntings and Cardinal Grosbeaks very near at hand. This autumn we find several on the leafless limbs that we missed in the summer.

One afternoon this autumn a Red-tailed Hawk flew into a field near the woods, and capturing a small animal, flew into a leafless elm. With my glasses I could see the Hawk plainly, but not his

prey, which, however, could not have been much larger than a field mouse. The incident was of especial interest because three or four chickens were scratching in the grass within a few rods of where the Hawk struck for the mouse. The field was far enough from the house that it is not probable the Hawk left the chickens undisturbed out of fear, and the story lends strength to the argument that the Red-tailed Hawk, as a rule, attacks chickens only when other prey is not to be found. ALICE EDGERTON.

Columbiana, Ohio.

THE SUMMER TANAGER AT HILLSBORO, OHIO.

A pair of Summer Tanagers was first observed on May 4, 1913, flitting through the dazzling noonday sunlight and alighting on a nearby wire fence. The favorite places of these birds are the borders of the forest, where they may be seen flying about among the trees or perching on the telephone poles. The latter part of June the frequent visits of a pair to a particular spot revealed their secret. The nest was in a catalpa tree about twenty feet from the ground and two feet from the end of a limb, carefully concealed. The young left the nest July 1st.

KATIE M. ROADS.

FIELD NOTES FROM CAMBRIDGE, OHIO.

The list is unusual, only because the birds have all been found within a radius of less than a mile. Others seen, but not within this radius, are omitted. The selected area contains a little of almost every attraction for bird life: woodland, meadow, hedge, orchard, evergreen, thicket, stream and pond. Being unable to hunt the birds every day during the migratory season, I have not seen the entire list in one year. But, with the few exceptions, which I have marked rare, no doubt they might all be recorded the same year.

The Bobolinks, Stilt Sandpiper and Bonaparte Gull made their first appearance within this radius this last May. The Bachman Sparrow is very rare. Another bird student and I together saw the bird and heard the clear sweet song.

The Mockingbird, Evening Grosbeak, Pileated Woodpecker and Black-crowned Night Heron are accidentals; no other record being had from this locality, that I know of.

A decrease in the number of Hairy Woodpeckers has been noticeable for two or three years; while this season a decided increase in Blue Jays, Robins, Brown Thrashers, Wood Thrush, Cedar Waxwings, and Shrikes is marked, and never have we had such flocks of Juncos

and Tree Sparrows as assembled together during March and the first two weeks of April; the sweet tinkling voices filled the air with melody, and the telltale white feathers looked like hundreds of tiny pennants.

Only once before have I heard the song of the Fox Sparrow. This April a number of Songsters remained in the thicket for over a week. I cannot tell of that music, the sunset glory through the budding trees must go with it.

Song Sparrow
Lark Sparrow—Rare
Vesper Sparrow
Field Sparrow
Chipping Sparrow
Grasshopper Sparrow
Fox Sparrow
Tree Sparrow
Bachman Sparrow (one year only, but seen distinctly and heard singing)
White-throated Sparrow
White-crowned Sparrow
Goldfinch
Purple Finch—Rare
Rose-breasted Grosbeak
Evening Grosbeak (Feb. to May, 1911)
Towhee
Cardinal
Dickcissel—Rare
Indigo Bunting
Junco
Snowflake—Rare
Bronzed Grackle
Rusty Blackbird
Red-winged Blackbird
Cowbird
Meadowlark
Orchard Oriole
Baltimore Oriole
Scarlet Tanager
Summer Tanager
Crow
Blue Jay
Golden-crowned Kinglet
Ruby-crowned Kinglet
Blue-gray Gnatcatcher
Prairie Horned Lark
Chickadee
Tufted Titmouse
White-breasted Nuthatch
Red-breasted Nuthatch
Hermit Thrush
Wilson Thrush
Wood Thrush
Olive-backed Thrush
Gray-cheeked Thrush
Robin
Bluebird
Brown Creeper
Catbird
Brown Thrasher
Bewick Wren
Carolina Wren
Winter Wren—Rare
House Wren
Southern Mockingbird (Sept. and Oct. 1912 only)
Barn Swallow
Tree Swallow
Rough-winged Swallow—Rare
Bank Swallow—Rare
Purple Martin
Red-headed Woodpecker
Hairy Woodpecker
Downy Woodpecker
Red-bellied Woodpecker
Yellow-bellied Sapsucker
Flicker
Northern Pileated Woodpecker (once only)
King-bird
Phœbe
Wood Pewee
Crested Flycatcher
Traill Flycatcher
Least Flycatcher
Yellow-bellied Flycatcher
Acadian Flycatcher
Ruby-throated Humming-bird
Nighthawk
Whippoorwill
White-eyed Vireo
Red-eyed Vireo
Yellow-throated Vireo
Blue-headed Vireo—Rare
Warbling Vireo

Migrant Shrike
Chimney Swift
Blue-winged Warbler
Magnolia Warbler
Myrtle Warbler
Yellow Warbler
Black and White Warbler
Wilson Warbler
Mourning Warbler
Black-throated Green Warbler
Black-throated Blue Warbler
Hooded Warbler
Kentucky Warbler—Rare
Palm Warbler
Blackburnian Warbler
Bay-breasted Warbler
Chestnut-sided Warbler
Cerulean Warbler—Rare
Northern Parula Warbler—Rare
Nashville Warbler
Redstart
Yellow-breasted Chat
Water-Thrush
Louisiana Water-Thrush
Oven-bird
Northern Yellow-throat
Black-poll Warbler
Canada Warbler
Bohemian Waxwing—Rare
Cedar Waxwing
Yellow-billed Cuckoo
Black-billed Cuckoo
Kingfisher
Mourning Dove
Turkey Vulture
Cooper Hawk
Red-tailed Hawk
Pigeon Hawk
Sparrow Hawk
Screech Owl
Saw-whet Owl
Killdeer
Semipalmated Plover
Wilson Snipe
Pectoral Sandpiper
Spotted Sandpiper
Yellow-legs
Greater Yellow-legs
Solitary Sandpiper
American Woodcock
Blue-winged Teal Duck
Lesser Scaup Duck
Buffle-head Duck
Ruddy Duck
Baldpate Duck
Pied-billed Grebe
American Bittern
Sora Rail
Virginia Rail
Black-crowned Night Heron
Great Blue Heron
Bob-white
Bonaparte Gull (May, 1914)
Bobolink (May, 1914)
Stilt Sandpiper (May, 1914)

MRS. ROBERT T. SCOTT.

THE NEST-BOX TRAP FOR SPARROWS

I would like to call the attention of bird-lovers to the efficiency of the nest-box trap for English sparrows. This trap is fully illustrated and described in U. S. Bulletin "The English Sparrow as a Pest," but I have never found reference to its use in current bird literature.

Poisoned grain is liable to kill native birds. Wire traps must be baited with tempting food, and after two or three settings in the same place, sparrows will not enter at all. Shooting is effective to only a limited extent, and dangerous as well as unlawful in towns.

In contrast to these methods, the nest-box trap needs no bait whatever; every bird that enters disappears and will quickly die of suffocation if not removed and killed; it has the attraction of mystery, for none of those that enter are able to warn their companions of the danger; and it is in working order all the time, whether any one is at home or not.

The possible objection is that native birds of course can be caught, as well as sparrows, and will die unless soon removed. However, in my experience, only two birds other than sparrows have entered; both were wrens, and one was released unhurt; the other, a very young bird, was dead when found. To minimize this risk, the trap may be placed in a position frequented by sparrows and therefore apt to be avoided by other birds, and examined during the nest hunting season as often as possible; or the rack can be detached during that time.

My nest-box trap was built in April, 1913, and cost only a trifle. Since its erection, or a year and six months to date, it has caught 152 sparrows, with no attention except to remove and destroy the victims. Five or six live sparrows have been taken out at one time.

I often feel that the stern necessity for constant war against the sparrow is not properly kept in mind by all of us as bird lovers. Nest boxes and martin houses are worse than useless if not carefully guarded; feeding devices for winter birds are monopolized by sparrows sooner or later in the majority of cases. It is not enough that we occasionally use the dust-shot gun or air rifle; there must be active antagonism as nearly all the time as possible. It seems to me that the nest-box trap above referred to affords a constant means of destruction, and I urge its adoption by all those interested in the preservation of our native birds. T. H. W.

Iowa, October, 1914.

WHERE ARE THE CHICKADEES?

There are no Chickadees in the vicinity of Oberlin, Ohio. It would be interesting to know if they have gone farther south than is their custom in winter. Reports from more southern counties indicate that there is no lack of Chickadees there. The editor would be glad to receive reports on the Chickadee for this winter.

CORRESPONDENCE

A letter written to Dr. T. C. Stephens by our fellow member, Dr. P. A. Taverner, of the Victoria Memorial Museum, Ottawa, Canada, is of such general interest that with the permission of both gentlemen it is reproduced here. Dr. Taverner says:

I have just returned from a field trip to the South Shore of the Gulf of St. Lawrence, for the Zoölogical Division of the Geological Survey of Canada. We spent a month from May 21st on Miscou Island, N. B., and then went to Percé, across the Bay of Chaleurs; where we spent the remainder of the season to August 23d, with side trips to Gaspe and a flying visit to the Magdalen Islands.

Most of the work after Miscou was put on sea birds and Bonaventure Island the famous Gannet breeding place, three miles from Percé was a mine of interesting experiences and at Gaspe we made an economic study of the Cormorant—*Phalcrocorax auritus*—in relation to the salmon fisheries and hope that incidentally we have gone far to stop the killing of these birds.

We obtained a fine series of skins of nearly all the sea species inhabiting these shores, showing the various summer plumages of the various ages.

We are also able to correct the generally reported identification that gives *P. carbo* as the breeding Cormorant of this section. They are in fact all *auritus*, and one of the interesting problems will be in future to map out the summer distribution of these two species on the St. Lawrence coasts.

Besides this expedition we have two others in the field yet. Dr. R. M. Anderson is collecting and second in command with the Canadian Arctic Expedition under Stephanson. Our latest reports from him were written last December, but at the time of his writing he was in good health and his collecting progressing most favorably and with the promises of most satisfactory results. Fortunately he was not with the ill-fated "Karlark," that was crushed in the ice and whose crew we are still anxiously waiting to hear of through the U. S. Revenue Ship Bear.

Mr. Francis Harper of Cornell, constitutes the Zoölogical section of another expedition crossing from Lake Athabasca to Great Slave Lake. His last report was dated Athabasca Lake, June 8th, when about to make the final traverse. His results so far seemed most satisfactory and doubtless his final report on return will continue the promise of the earlier work.

Yours sincerely,

P. A. TAVERNER.

REVIEWS OF PUBLICATIONS

Handbook of Birds of the Western United States. Florence Merriam Bailey. Houghton, Mifflin Co. $3.50, net. Fourth Edition Revised.

This last edition of a well known and useful book is in the main a reprint of earlier editions, but with an extended "Addenda" of 58 pages, in which are indicated the changes in the nomenclature made in the last revisions of the Check-List of the A. O. U. committee, together with the addition of 56 forms and the elimination of 52. The last part of this "Addenda" is concerned with the "Birds of the Western United States in the Nomenclature of the 1910 Check-List," and with a list of "Books of Reference." The book was so complete for its purposes in the first edition that there has been little need for other changes than those given above.

L. J.

Alaskan Bird-Life as Depicted by Many Writers, edited by Ernest Ingersoll. Seven plates in colors and other illustrations. Published by the National Association of Audubon Societies. New York, 1914.

As stated in the introduction by T. Gilbert Pearson, the Secretary of this Association, the object of this volume of 72 pages is for free distribution among the people of Alaska for the purpose of educating them in regard to the real value of the birds and thus securing their coöperation in the conservation of Alaskan birds. This finds the hearty approval of the United States Bureau of Education. The birds of the several districts into which Alaska is divided topographically and climatically are treated on the group plan, and the volume closes with the extended treatment of the Tufted Puffin by William Leon Dawson, the Crested Auklet by Charles Haskins Townsend, the Emperor Goose by Edward W. Nelson, the Hudsonian Curlew by A. C. Bent, and the Alaskan Longspur by Edward W. Nelson. There are colored plates of these species, and of the Red Crossbill. It is a valuable volume. L. J.

A Peculiarity in the Growth of the Tail Feathers of the Giant Hornbill (*Rhinoplax vigil*). Alex. Wetmore, of the Biological Survey, U. S. Dept. Agr. No. 2059. From the Proceedings of the U. S. Nat. Mus. Vol. 47, pages 497-500. Published October 24, 1914.

It appears that one tail feather of the central pair of long feathers is fully developed before the young bird leaves the nest, and that in adult life the new feather of this pair grows out under the old one, the latter not being shed until the new one has become fully grown; also that the two central long feathers are shed in

alternate years. Certainly a remarkable condition of growth and molt. L. J.

Anatomical Notes on the Young of Phalacrocorax articeps georgianus. R. W. Shufeldt, M.D. Extract from A Report on the South Georgia Expedition. Science Bulletin of the Museum of the Brooklyn Institute of Arts and Sciences. Vol. 2, No. 4, pp. 95-102. November 5, 1914. Two plates.

This is a carefully prepared technical paper about a specimen twenty-four hours old. L. J.

The Gannetry at "The Stack," Orkney Islands. J. H. Gurney, F.Z.S. From "The Ibis" for October, 1914, pp. 631-634. One plate.

This short paper is a report of the impressions of the number of these birds found here after three visits in May and June, 1914, by the Duchess of Bedford. The Duchess concluded that the estimate of 8000 was too high, and that 5000 was nearer the fact.

L. J.

Are Gannets Destructive Birds? J. H. Gurney, F.Z.S. Reprinted from the Irish Naturalist, October, 1914, pp. 212-213.

The conclusion here reached is that while these birds do eat great quantities of herring and other fish they only serve to maintain the necessary balance, and therefore should not be considered a menace economically. L. J.

Geological Survey Work on Point Pelee, Ont. P. A. Taverner. Reprinted from The Ottawa Naturalist, Vol. XXVIII, November, 1914, pp. 97-105.

This is a brief report of work done here by the author and others, beginning on May 15, 1914, with references to work done here previously. It is encouraging to note that the Cardinals and Mockingbirds are holding their own here, if not increasing, but discouraging to find that the Carolina Wrens were all but exterminated. Indications point to their increase again, however. It is also interesting to note the reappearance of the Dickcissel and the taking of a specimen of Cory's Bittern (*Ixobrychus neoxenus*). To the record of the taking of the Prothonotary Warbler (*Protonotaria citrea*) noted on page 100, should be added the writer's record for August 22, 1911, on Pelee Island. The paper contains records of certain trees and other plants, and other animals than birds.

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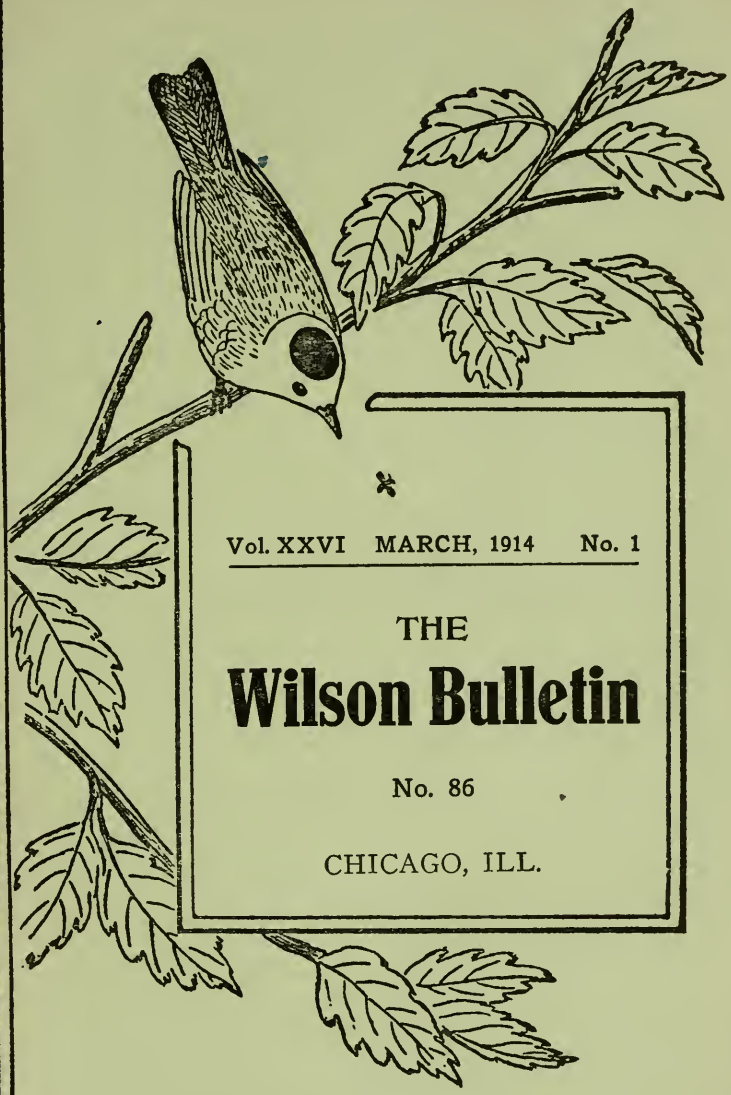

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THE

Wilson Bulletin

No. 86

CHICAGO, ILL.

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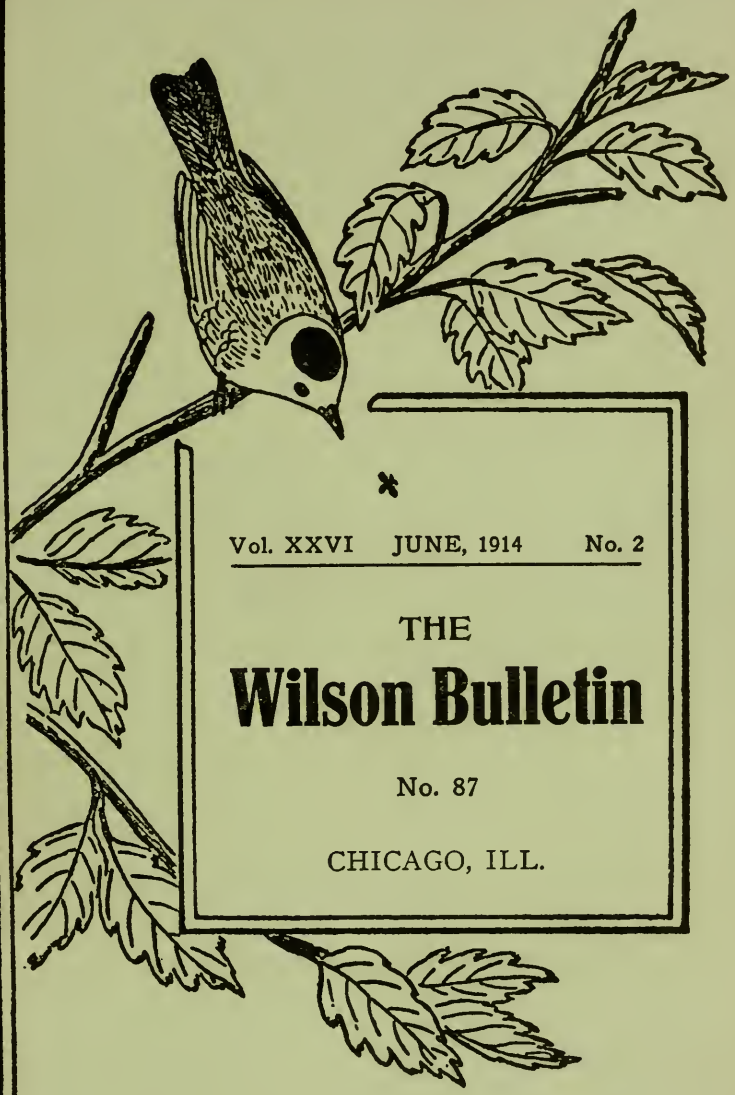

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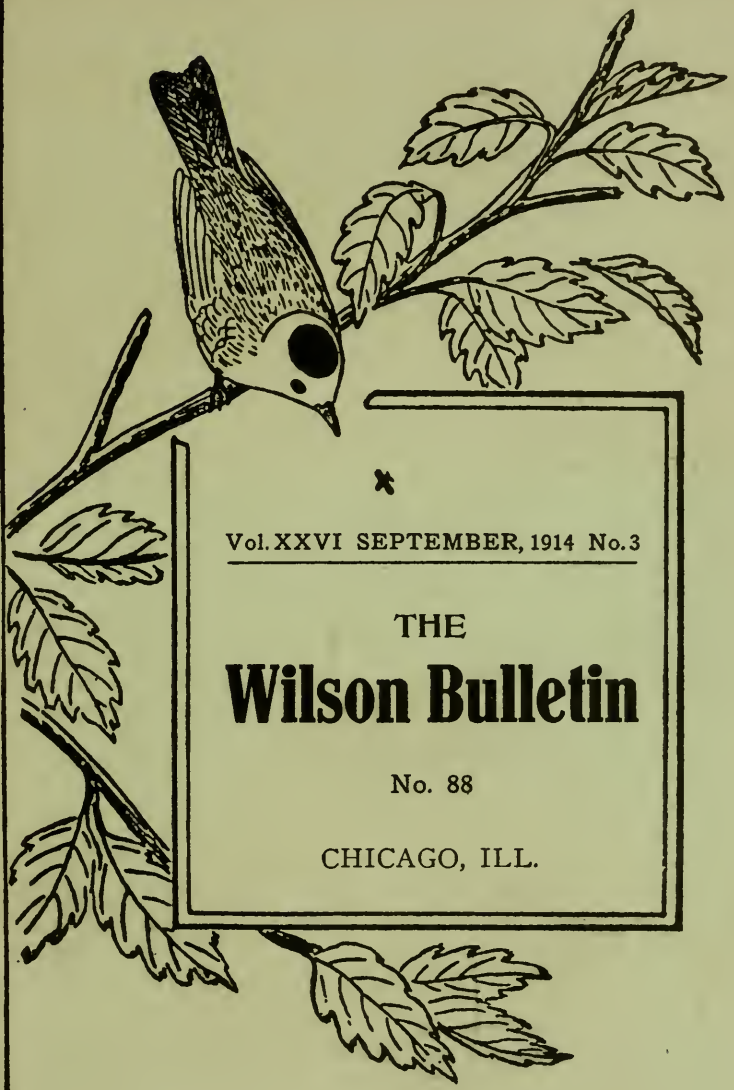

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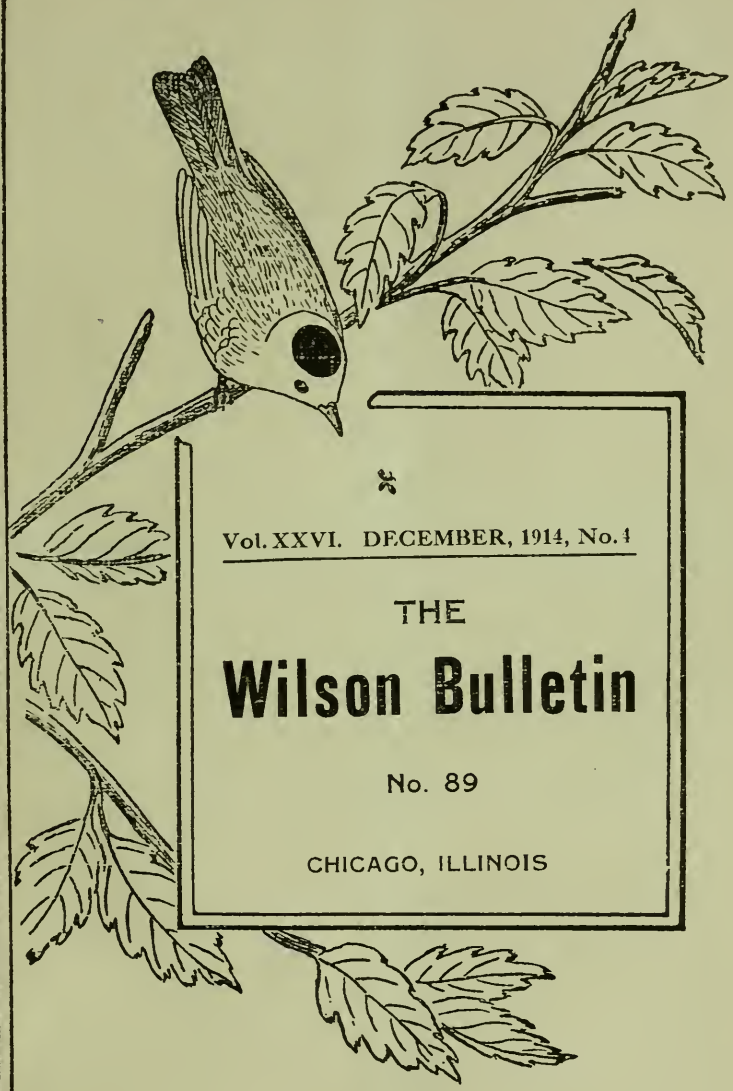

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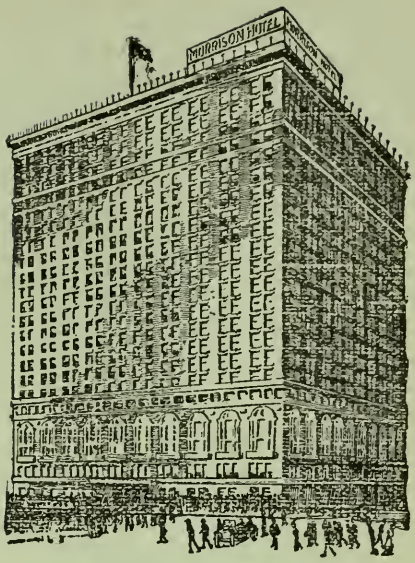

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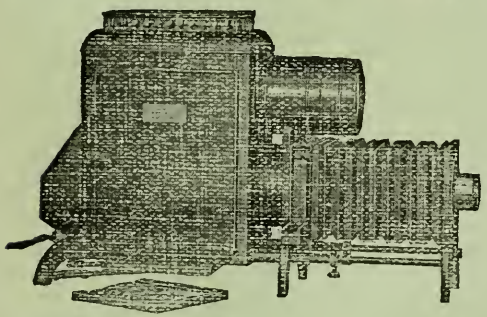

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